RESEARCH,INNOVATION AND EXTENSION

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CRITERIA – 3

3.3.2 ***workshops/seminars/conferences including on Research Methodology, Intellectual Property Rights (IPR) and entrepreneurship conducted during the last five years***

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3.3.2 Number of books and chapters in edited volumes/books published and papers published in national/ international conference proceedings per teacher during last five year										
Sl. No.	**Name of the teacher**	**Title of the book/chapters published**	**Title of the paper**	**Title of the proceedings of the conference**	**Name of the conference**	**National / International**	**Calendar Year of publication**	**ISBN number of the proceeding**	**Affiliating Institute at the time of publication**	**Name of the publisher**
1	Dr. Lopamudra Das		Improved protein coding region prediction using dipole moment based SVD algorithm	5th International Conference on Signal Processing, Computing and Control (ISPCC), IEEE		**International**	2019	978-1-7281-3988-3	No	IEEE
2	Sumant Ku. Mohapatra		A novel method for epileptic EEG classification using DWT, MGA and ANFIS: A real time application to cardiac patients with epilepsy	Cognitive Informatics and Soft Computing: Proceeding of CISC		**International**	2019	978-981-13-0617-4	Yes	Springer
3	Sumant Ku. Mohapatra		Epileptic Seizure Detection Using DWT-and Rule-Based Variants of TSVM with KNN	Intelligent and Cloud Computing: Proceedings of ICICC		**International**	2019	978-981-15-6202-0	No	Springer
4	Dr. D. N. Pattanayak		A novel method for epileptic EEG classification using DWT, MGA and ANFIS: A real time application to cardiac patients with epilepsy	Cognitive Informatics and Soft Computing: Proceeding of CISC		**International**	2019	978-981-13-0617-4	Yes	Springer
5	Dr. Madhusmita Mahanty		A Study on Digital Fundus Images of Retina for Analysis of Diabetic Retinopathy	Advances in Machine Learning and Computational Intelligence: Proceedings of ICMLCI		**International**	2019	978-981-15-5243-4	Yes	Springer
6	Siba Prasad Pati		A Framework to Build User Profile on Cryptocurrency Data for Detection of Money Laundering Activities	International Conference on Information Technology (ICIT). IEEE, 2019		**International**	2019	978-1-7281-6052-8	No	IEEE
7	Dr. Sakuntala Mahapatra		A Study on Digital Fundus Images of Retina for Analysis of Diabetic Retinopathy	Advances in Machine Learning and Computational Intelligence: Proceedings of ICMLCI, Springer		**International**	2019	978-981-15-5243-4	Yes	Springer
8	Sk. Mohammed Ali		Electrical Properties of the PVDF-Lead –Free Ceramic-Based Composite Film for Sensor Applications	Green Technology for Smart City and Society: Proceedings of GTSCS, Springer		**International**	2019	978-981-15-8218-9	Yes	Springer
9	Milee Panigrahi		UtilizingColorandTextureAttributesforNavigationandObstacleDetectioninTwo-WheeledMobileRobot:DesignandVisionControlApproach	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
10	Asish Kuma rBarik		UtilizingColorandTextureAttributesforNavigationandObstacleDetectioninTwo-WheeledMobileRobot:DesignandVisionControlApproach	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
11	Sk. Mohammed Ali		UtilizingColorandTextureAttributesforNavigationandObstacleDetectioninTwo-WheeledMobileRobot:DesignandVisionControlApproach	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
12	A K Nayak		UnlockingEfficiency:LeanTechniquesforProductivityEnhancementinSmall-ScaleIndustries	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
13	Tusarkanta Kumbhar		UnlockingEfficiency:LeanTechniquesforProductivityEnhancementinSmall-ScaleIndustries	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
14	Rabiteja Patra		UnlockingEfficiency:LeanTechniquesforProductivityEnhancementinSmall-ScaleIndustries	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology

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15	A K Nayak		UnlockingEfficiency:LeanTechniquesforProductivityEnhancementinSmall-ScaleIndustries	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
16	Tusarkanta Kumbhar		UnlockingEfficiency:LeanTechniquesforProductivityEnhancementinSmall-ScaleIndustries	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
17	Dipti Ranjan Panda		ImplementingLeanPrinciplesforEnhancedProductivityinSmall-ScaleIndustries	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
18	Rabiteja Patra		ExploringHeatPipePerformancewithVariedInclinationsandWorkingFluids	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
19	Lohit Kumar Sahoo		ExploringHeatPipePerformancewithVariedInclinationsandWorkingFluids	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
20	Ajaya Kumar Sahoo		ExploringHeatPipePerformancewithVariedInclinationsandWorkingFluids	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
21	A K Sahoo		DevelopingaPrototypeSarcasticGadgetforAddressingPerceptualDisabilities:ADesignApproach	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
22	P K Nayak		DevelopingaPrototypeSarcasticGadgetforAddressingPerceptualDisabilities:ADesignApproach	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
23	A K Nayak		DevelopingaPrototypeSarcasticGadgetforAddressingPerceptualDisabilities:ADesignApproach	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
24	B R Nayak		DevelopingaPrototypeSarcasticGadgetforAddressingPerceptualDisabilities:ADesignApproach	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
25	P Chand		UtilizingGraphTheoryConceptsinDevelopingDisasterRecoveryManagementStrategies	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
26	Kalyani Pradhan		UtilizingGraphTheoryConceptsinDevelopingDisasterRecoveryManagementStrategies	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
27	A K Sahoo		UtilizingGraphTheoryConceptsinDevelopingDisasterRecoveryManagementStrategies	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
29	A K Nayak		DesigninganInnovationPlatformforPisciculturealongtheEraofBigData	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
30	Tusarkanta kumbhar		DesigninganInnovationPlatformforPisciculturealongtheEraofBigData	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
31	Dipti Ranjan Panda		ANovelFuzzyLogic-BasedSensorlessSpeedControlMethodforPositionSensorlessBLDCServoDrives	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
32	Rabiteja Patra		OptimizingCoolingPerformanceinAtriumBuildings:AssessmentofEnergyConservationMeasuresandKeyParameters	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
33	Lohit Kumar Sahoo		OptimizingCoolingPerformanceinAtriumBuildings:AssessmentofEnergyConservationMeasuresandKeyParameters	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology

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34	A K Sahoo		OptimizingCoolingPerformanceinAtriumBuildings:AssessmentofEnergyConservationMeasuresandKeyParameters	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
35	Rabiteja Patra		ExploringtheComplexInfluenceofTemperatureandTensileStressonHigh-TemperatureOrientationModificationofUndrawnPolyesterFilaments	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
36	Ajaya Kumar Sahoo		ExploringtheComplexInfluenceofTemperatureandTensileStressonHigh-TemperatureOrientationModificationofUndrawnPolyesterFilaments	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
37	Asish Kuma rBarik		ExploringtheComplexInfluenceofTemperatureandTensileStressonHigh-TemperatureOrientationModificationofUndrawnPolyesterFilaments	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
38	Sudhansu Ranjan Lenka		ComparativeAnalysisofTreeStructureAlgorithmsforWebDataExtraction	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
39	Rabiteja Patra		ComparativeAnalysisofTreeStructureAlgorithmsforWebDataExtraction	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
40	B R Nayak		ComparativeAnalysisofTreeStructureAlgorithmsforWebDataExtraction	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
41	Sudhansu Ranjan Lenka		AssessingRiskandImplementingSecurityMeasuresagainstWannaCryRansomware	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
42	Rabiteja Patra		AssessingRiskandImplementingSecurityMeasuresagainstWannaCryRansomware	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
43	B R Nayak		AssessingRiskandImplementingSecurityMeasuresagainstWannaCryRansomware	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
44	A Bohidhar		EvaluatingSoilErosionandReservoirSedimentationintheNiraRiverBasin,India:AComprehensiveAssessment	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
45	Roma Sahoo		EvaluatingSoilErosionandReservoirSedimentationintheNiraRiverBasin,India:AComprehensiveAssessment	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
46	Bisawjit Tripathy		EvaluatingSoilErosionandReservoirSedimentationintheNiraRiverBasin,India:AComprehensiveAssessment	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
47	B R Nayak		ExploringtheFeasibilityofMeasuringSolarUltravioletEmissionviaThermoLuminescenceofSelectCrystals	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
48	P Chand		ExploringtheFeasibilityofMeasuringSolarUltravioletEmissionviaThermoLuminescenceofSelectCrystals	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
49	P K Nayak		ExploringtheFeasibilityofMeasuringSolarUltravioletEmissionviaThermoLuminescenceofSelectCrystals	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
50	A K Sahoo		ExploringtheFeasibilityofMeasuringSolarUltravioletEmissionviaThermoLuminescenceofSelectCrystals	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
51	B R Nayak		EnhancingSecuritythroughDeepLearning-BasedFaceDetection:LeveragingCASIADatasets	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology

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52	P Chand		EnhancingSecuritythroughDeepLearning-BasedFaceDetection:LeveragingCASIADatasets	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
53	P K Nayak		EnhancingSecuritythroughDeepLearning-BasedFaceDetection:LeveragingCASIADatasets	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
54	A K Sahoo		EnhancingSecuritythroughDeepLearning-BasedFaceDetection:LeveragingCASIADatasets	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
55	A K Nayak		FiniteElementAnalysisofWeldJointStrengthforCurvedPlate Overlaps:OptimizingPressureVesselSkirtSupportDesign	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
56	Tusarkanta Kumbhar		FiniteElementAnalysisofWeldJointStrengthforCurvedPlate Overlaps:OptimizingPressureVesselSkirtSupportDesign	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
57	Dipti Ranjan Panda		FiniteElementAnalysisofWeldJointStrengthforCurvedPlate Overlaps:OptimizingPressureVesselSkirtSupportDesign	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
58	A K Sahoo		ExperimentalInvestigationofThermalResistanceinComposi teMaterials	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
59	A K Nayak		ExperimentalInvestigationofThermalResistanceinComposi teMaterials	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
60	Rabiteja Patra		ExperimentalInvestigationofThermalResistanceinComposi teMaterials	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
61	A K Sahoo		AssessingThermalResistanceinCompositeMaterials:AnExp erimentalApproach	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
62	A K Nayak		AssessingThermalResistanceinCompositeMaterials:AnExp erimentalApproach	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
63	Rabiteja Patra		AssessingThermalResistanceinCompositeMaterials:AnExp erimentalApproach	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
64	A K Sahoo		AnalyticalStudyofBottomingOrganicRankineCycle(ORC)i nSteamTurbinePowerStations	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
65	A K Nayak		AnalyticalStudyofBottomingOrganicRankineCycle(ORC)i nSteamTurbinePowerStations	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
66	Rabiteja Patra		AnalyticalStudyofBottomingOrganicRankineCycle(ORC)i nSteamTurbinePowerStations	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
67	Lohit Kumar Sahoo		ExploringPowerSwitchingandConverterTechnologies:ACo mprehensiveReview	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
68	Tusarkanta Kumbhar		ExploringPowerSwitchingandConverterTechnologies:ACo mprehensiveReview	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
69	Dipti Ranjan Panda		ExploringPowerSwitchingandConverterTechnologies:ACo mprehensiveReview	National Conference on Emerging Technology and Advance Engineering (NCETAE-19)		National	2019	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
70	Tanmaya Ku. Das		Design of a 3-bit chipless RFID tag using circular split-ring resonators for retail and healthcare applications	National Conference on Communications (NCC). IEEE		International	2020	978-1-7281-5120-5	No	IEEE
71	Sk. Mohammed Ali		Electrical Properties of the PVDF-Lead –Free Ceramic-Based Composite Film for Sensor Applications	GTSCS 2020, Springer		International	2020	978-981-15-8218-9	Yes	Springer

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72	Dipalika Das		Crime Pattern Detection Using Data Mining	Intelligent Data Analytics for Terror Threat Prediction: Architectures, methodologies, Techniques and Applications: chapter11		International	2020	https://doi.org/10.1002/9781119711629.ch11	Yes	Wiley (Online Library)
73	Sakuntala Mahapatra		A study on digital fundus images of retina for analysis of diabetic retinopathy	Advances in Machine Learning and Computational Intelligence: Proceedings of ICMLCI		International	2021	978-981-15-5243-4	Yes	Springer
74	Siba Prasad Pati		An Empirical Analysis of Similarity based Single Document Summarization	5th International Conference on Computing Methodologies and Communication (ICCMC). IEEE		International	2021	978-1-6654-0360-3	No	IEEE
75	Millee Panigrahi		Evaluation of transfer learning model for mango recognition	Intelligent Manufacturing and Energy Sustainability: Proceedings of ICIMES		International	2021	978-981-33-4443-3	Yes	Springer
76	Madhusmita Mohanty		A study on digital fundus images of retina for analysis of diabetic retinopathy	Advances in Machine Learning and Computational Intelligence: Proceedings of ICMLCI		International	2021	978-981-15-5243-4	Yes	Springer
77	Millee Panigrahi		A hybrid model for epileptic seizure classification using wavelet packet decomposition and SVM	Advances in Intelligent Computing and Communication: Proceedings of ICAC		International	2021	978-981-16-0695-3	No	Springer
78	Biswa Ranjan Swain		A Compact Fractal Antenna for Ultra-Wide Band Operation	2nd International Conference on Applied Electromagnetics, Signal Processing, & Communication (AESPC). IEEE		International	2021	978-1-6654-4299-2	No	IEEE
79	Rabiteja Patra		Exploring CAN Sniffing Techniques: A Study in Design and Development	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
80	A K Sahoo		Exploring CAN Sniffing Techniques: A Study in Design and Development	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
81	Asish Kumar Barik		Exploring CAN Sniffing Techniques: A Study in Design and Development	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
82	A K Nayak		Dissimilar Metal Welding of AISI 4130 Steel To 18% NI Mararing Steel	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
83	Tusarkanta Kumbhar		Dissimilar Metal Welding of AISI 4130 Steel To 18% NI Mararing Steel	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
84	Rabiteja Patra		Dissimilar Metal Welding of AISI 4130 Steel To 18% NI Mararing Steel	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
85	A K Nayak		Integration of Wind Energy Conversion Systems with Grid: Performance Evaluation, Analysis, and Simulation	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
86	Itishree Behera		Integration of Wind Energy Conversion Systems with Grid: Performance Evaluation, Analysis, and Simulation	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
87	A K Sahoo		Integration of Wind Energy Conversion Systems with Grid: Performance Evaluation, Analysis, and Simulation	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
88	A K Nayak		Crime Pattern Detection Using Data Mining	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
89	Tusarkanta Kumbhar		Crime Pattern Detection Using Data Mining	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
90	Rabiteja Patra		Crime Pattern Detection Using Data Mining	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
91	A K Nayak		Effect of Spacing and Diameters on the Dynamic Analysis of Laterally Loaded Piles	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology

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92	Tusarkanta Kumbhar		Effect of Spacing and Diameters on the Dynamic Analysis of Laterally Loaded Piles	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
93	Rabiteja Patra		Effect of Spacing and Diameters on the Dynamic Analysis of Laterally Loaded Piles	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
94	A K Nayak		Enhancing Breast Cancer Prognosis: Leveraging Ensemble Machine Learning Techniques	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
95	A K Nayak		Investigating the Influence of Hardness on Abrasive Wear Modes in Three-Body Wear Conditions	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
96	Tusarkanta Kumbhar		Investigating the Influence of Hardness on Abrasive Wear Modes in Three-Body Wear Conditions	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
97	Rabiteja Patra		Investigating the Influence of Hardness on Abrasive Wear Modes in Three-Body Wear Conditions	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
98	A K Nayak		Exploring the Versatility of Shape Memory Alloys: A Comprehensive Review of Applications	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
99	Tusarkanta Kumbhar		Exploring the Versatility of Shape Memory Alloys: A Comprehensive Review of Applications	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
100	Rabiteja Patra		Exploring the Versatility of Shape Memory Alloys: A Comprehensive Review of Applications	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
101	Sudhansu Ranjan Lenka		Creating WARKS: A Novel Approach for Supply Chain Management Accessibility and Development	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
102	Rabiteja Patra		Creating WARKS: A Novel Approach for Supply Chain Management Accessibility and Development	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
103	B R Nayak		Creating WARKS: A Novel Approach for Supply Chain Management Accessibility and Development	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
104	Sudhansu Ranjan Lenka		Improving Breast Cancer Prognosis with Ensemble Machine Learning Methods	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
105	Rabiteja Patra		Improving Breast Cancer Prognosis with Ensemble Machine Learning Methods	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
106	B R Nayak		Improving Breast Cancer Prognosis with Ensemble Machine Learning Methods	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
107	Rabiteja Patra		Bose Suspension System: Revolutionizing Automotive Ride Comfort	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
108	A.K.Nayak		Enhancing Energy Efficiency in Thermal Power Generation: Strategies and Innovations	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
109	Pradyumna Nayak		Predictive Control Systems for HVAC: Optimizing Heating, Ventilation, and Air Conditioning Systems	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
110	Pradyumn Nayak		Exploring Ferroelectric Materials in Microstrip Patch Antenna Fabrication: A Comprehensive Survey	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
111	Rabiteja Patra		Exploring Ferroelectric Materials in Microstrip Patch Antenna Fabrication: A Comprehensive Survey	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
112	Kalyani Pradhan		Exploring Ferroelectric Materials in Microstrip Patch Antenna Fabrication: A Comprehensive Survey	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology

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113	A K Sahoo		Investigating the Influence of Soft Material Hardness and Hard Material Surface Morphology on Friction and Transfer Layer Formation in Dry Conditions	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
114	Pradyumna Nayak		Investigating the Influence of Soft Material Hardness and Hard Material Surface Morphology on Friction and Transfer Layer Formation in Dry Conditions	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
115	Itishree Behera		Investigating the Influence of Soft Material Hardness and Hard Material Surface Morphology on Friction and Transfer Layer Formation in Dry Conditions	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
116	A K Nayak		Friction and Transfer Layer Formation: Dry Condition Effects of Soft Material Hardness and Hard Material Surface Morphology	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
117	Itishree Behera		Friction and Transfer Layer Formation: Dry Condition Effects of Soft Material Hardness and Hard Material Surface Morphology	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
118	A K Sahoo		Friction and Transfer Layer Formation: Dry Condition Effects of Soft Material Hardness and Hard Material Surface Morphology	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
119	Rabiteja Patra		Enhancing Elderly Care: A Fall Detection System for Continuous Monitoring	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
120	A K Sahoo		Enhancing Elderly Care: A Fall Detection System for Continuous Monitoring	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
121	Ashish Kumar Barik		Enhancing Elderly Care: A Fall Detection System for Continuous Monitoring	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
122	Rabiteja Patra		Exploring Recent Advances in Brake Friction Materials: A Comprehensive Review of Fabrication Techniques	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
123	Ajaya Kumar Sahoo		Exploring Recent Advances in Brake Friction Materials: A Comprehensive Review of Fabrication Techniques	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
124	Asish Kumar Barik		Exploring Recent Advances in Brake Friction Materials: A Comprehensive Review of Fabrication Techniques	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
125	Rabiteja Patra		Design and Vision-Based Control for Navigation and Obstacle Detection in Two- Wheeled Mobile Robots Using Color and Texture Attributes	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
126	A K Nayak		Design and Vision-Based Control for Navigation and Obstacle Detection in Two- Wheeled Mobile Robots Using Color and Texture Attributes	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
127	Tusarkanta Kumbhar		Design and Vision-Based Control for Navigation and Obstacle Detection in Two- Wheeled Mobile Robots Using Color and Texture Attributes	National Conference on Advance in Engineering and Technology (NCAET-2021)		National	2021	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
128	Dr. Minu Samantaray		Enhanced Feature Matching Algorithm for Medical Image Registration	Smart and Sustainable Technologies: Rural and Tribal Development Using IoT and Cloud Computing: Proceedings of ICSST, Springer		International	2022	978-981-19-2277-0	No	Springer
129	Dr. Minu Samantaray		Automated Classification of Hepatocellular Carcinoma (HCC) Images for Detection of Malignant Tumor Using HOG Technique	Proceedings of International Conference on Data Science and Applications: ICDSA, Springer		International	2022	978-981-16-5348-3	No	Springer
130	Sumant Kumar Mohapatra		Automatic Detection of Epileptic Seizure Based on Differential Entropy, E-LS-TSVM, and AB-LS-SVM	Intelligent and Cloud Computing: Proceedings of ICICC, Springer		International	2022	978-981-16-9873-6	No	Springer
131	Dr. Millee Panigrahi		Face Mask Detection in Public Places Using Small CNN Models	Intelligent and Cloud Computing: Proceedings of ICICC, Springer		International	2022	978-981-16-9873-6	Yes	Springer
132	Dr. Millee Panigrahi		Automated Classification of Hepatocellular Carcinoma (HCC) Images for Detection of Malignant Tumor Using HOG Technique	Proceedings of International Conference on Data Science and Applications: ICDSA, Springer		International	2022	978-981-16-5348-3	No	Springer

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133	Nibedita Pati		Evaluation of Different Paradigms of Machine Learning Classification for Detection of Breast Carcinoma."	Smart and Sustainable Technologies: Rural and Tribal Development Using IoT and Cloud Computing: Proceedings of ICSST, Springer		International	2022	978-981-19-2277-0	No	Springer
134	Dr. Millee Panigrahi		Enhanced Feature Matching Algorithm for Medical Image Registration	Smart and Sustainable Technologies: Rural and Tribal Development Using IoT and Cloud Computing: Proceedings of ICSST, Springer		International	2022	978-981-19-2277-0	Yes	Springer
135	Nibedita Pati		Automated Classification of Hepatocellular Carcinoma (HCC) Images for Detection of Malignant Tumor Using HOG Technique	Proceedings of International Conference on Data Science and Applications: ICDSA, Springer		International	2022	978-981-16-5348-3	No	Springer
136	Millee Panigrahi		Evaluation of Different Paradigms of Machine Learning Classification for Detection of Breast Carcinoma."	Smart and Sustainable Technologies: Rural and Tribal Development Using IoT and Cloud Computing: Proceedings of ICSST, Springer		International	2022	978-981-19-2277-0	Yes	Springer
137	Milee Panigrahi		Image Processing for Robotic Arm Motion Control: Techniques and Applications	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
138	Sk Mohammed Ali		Image Processing for Robotic Arm Motion Control: Techniques and Applications	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
139	Asish Kumar Barik		Image Processing for Robotic Arm Motion Control: Techniques and Applications	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
140	Pradumn Nayak		Ferroelectric Materials in Microstrip Patch Antenna Fabrication: A Comprehensive Survey of Applications and Advancements	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
141	Rabiteja Patra		Ferroelectric Materials in Microstrip Patch Antenna Fabrication: A Comprehensive Survey of Applications and Advancements	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
142	Kalyani Pradhan		Ferroelectric Materials in Microstrip Patch Antenna Fabrication: A Comprehensive Survey of Applications and Advancements	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
143	A K Nayak		Influence of Soft Material Hardness and Hard Material Surface Morphology on Friction and Transfer Layer Formation in Dry Conditions	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
144	Itishree Behera		Influence of Soft Material Hardness and Hard Material Surface Morphology on Friction and Transfer Layer Formation in Dry Conditions	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
145	A.K.Sahoo		Influence of Soft Material Hardness and Hard Material Surface Morphology on Friction and Transfer Layer Formation in Dry Conditions	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
146	Rabiteja Patra		Advanced Fall Detection System for Elderly Care Monitoring	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
147	Ajaya ku Sahoo		Advanced Fall Detection System for Elderly Care Monitoring	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
148	Ajaya ku Sahoo		Fabrication of Recent Novel Brake Friction Materials: A systematic Review	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
149	Ajaya ku Sahoo		Big Data-Driven Innovation Platform Design for Pisciculture Optimization	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
150	A.K.Sahoo		A Novel Fuzzy Logic-Based Sensorless Speed Control Approach for Position Sensorless BLDC Servo Drives	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology

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151	Itishree Behera		A Novel Fuzzy Logic-Based Sensorless Speed Control Approach for Position Sensorless BLDC Servo Drives	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
152	Pradumn Nayak		A Novel Fuzzy Logic-Based Sensorless Speed Control Approach for Position Sensorless BLDC Servo Drives	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
153	Biswa Ranjan Nayak		Optimizing Cooling Performance in Atrium Buildings: Assessment of Energy Conservation Measures and Key Parameters	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
154	Sudhanshu Ranjan Lenka		Optimizing Cooling Performance in Atrium Buildings: Assessment of Energy Conservation Measures and Key Parameters	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
155	Biswa Ranjan Nayak		Comparative Analysis of Relative Radiometric Normalization Techniques without Change Sets	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
156	Sudhanshu Ranjan Lenka		Comparative Analysis of Relative Radiometric Normalization Techniques without Change Sets	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
157	Aditya Narayan Das		Exploring Strategies for Biological Artifact Removal in EEG Data	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
158	Biswajit Sarangi		Exploring Strategies for Biological Artifact Removal in EEG Data	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
159	Rahul Ranjan		Exploring Strategies for Biological Artifact Removal in EEG Data	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
160	Madhusmita Mohanty		Evaluation of WEKA's Classification Algorithms on Realworld Data Sets	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
161	Monalisa Rout		Evaluation of WEKA's Classification Algorithms on Realworld Data Sets	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
162	Madhusmita Mohanty		A Novel Tricolor Attenuation Model for Shadow Detection	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
163	Monalisa Rout		A Novel Tricolor Attenuation Model for Shadow Detection	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
164	Aditya Narayan Das		Depth-Aware Image Compression for Aesthetic Preservation	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
165	Rahul Ranjan		Depth-Aware Image Compression for Aesthetic Preservation	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
166	Arpita Nibedita		Measuring Synchronization in Coupled Systems via Visibility Graph Similarity Analysis	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
167	Ranjeep Pradhan		Measuring Synchronization in Coupled Systems via Visibility Graph Similarity Analysis	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
168	Shyamalendu Pati		Exploring Object-Oriented Real-Time Lossless Video Compression: A Comprehensive Review	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
169	, Rani Dubey		Exploring Object-Oriented Real-Time Lossless Video Compression: A Comprehensive Review	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology

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170	Manas Ranjan Choudhury		Enhancing Image Inpainting with Patch Propagation: A Case for Exemplar-Based Algorithms	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
171	Arpita Nibedita		Enhancing Image Inpainting with Patch Propagation: A Case for Exemplar-Based Algorithms	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
172	Manas Ranjan Choudhury		BER Analysis of OFDM Systems with Dynamic Modulation Adaptation	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
173	Arpita Nibedita		BER Analysis of OFDM Systems with Dynamic Modulation Adaptation	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
174	Partha Sarathi Mohapatra		BER Analysis of OFDM Systems with Dynamic Modulation Adaptation	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
175	Partha Sarathi Mohapatra		Innovative Approaches to CPLD-Based Wireless Device Control via Mobile Devices	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
176	Biswa Ranjan Nayak		Innovative Approaches to CPLD-Based Wireless Device Control via Mobile Devices	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
177	Biswajit Sarangi		Innovative Approaches to CPLD-Based Wireless Device Control via Mobile Devices	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
178	Kabita Sahoo		Nanobio-Sensors in Disease Detection and Drug Delivery: A Mathematical Approach	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
179	Yogasambhuta Dash		Nanobio-Sensors in Disease Detection and Drug Delivery: A Mathematical Approach	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
180	Yogasambhuta Dash		GUI-based Sinusitis Detection and Severity Analysis Toolkit in MATLAB	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology
181	Rani Dubey		GUI-based Sinusitis Detection and Severity Analysis Toolkit in MATLAB	National Conference on Engineering Research and Application (NCERA-2022)		National	2022	Conference Proceedings "Hard Copy"	Yes	Trident Academy of Technology

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COVER PAGE OF BOOK CHAPTERS

Improved Protein Coding Region Prediction using Dipole Moment based SVD Algorithm

Publisher: IEEE Cite This PDF

Lopamudra Das ; Anand Kumar ; Sarita Nanda ; J.K. Das All Authors

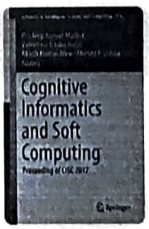
Abstract:
Genomic signal processing plays a significant role in the extraction of information contained in genomic sequences. Correct prediction of the protein coding region in a DNA sequence is the major concern in all the works. This paper presents a distinction from other exon prediction techniques by employing dipole moment mapping in conjunction with Singular value decomposition algorithm for exon location prediction which exhibits lower computational complexity. A low-cost mobile analyzer using Raspberry PI is presented which processes the genetic information fed to it and accurately identifies the exon positions. Several benchmark evaluation parameters are used to assess the efficacy of the technique.

Published in: 2019 5th International Conference on Signal Processing, Computing and Control (ISPCC)

Date of Conference: 10-12 October 2019
DOI: 10.1109/ISPCC48220.2019.8988320
Date Added to IEEE *Xplore*: 10 February 2020
Publisher: IEEE
ISBN Information:
Conference Location: Solan, India
ISSN Information:

A Novel Method for Epileptic EEG Classification Using DWT, MGA, and ANFIS: A Real Time Application to Cardiac Patients with Epilepsy

Conference paper | First Online: 12 August 2018
pp 525–534 | Cite this conference paper



Cognitive Informatics and Soft Computing

Mohanty Madhusmita, Basu Mousumi, Pattanayak Deba Narayan & Mohapatra Sumant Kumar

Part of the book series: Advances in Intelligent Systems and Computing ((AISC,volume 768))

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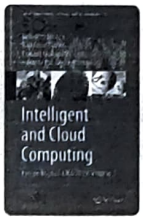
Epileptic Seizure Detection Using DWT- and Rule-Based Variants of TSVM with KNN

Conference paper | First Online: 29 August 2020
pp 357–364 | Cite this conference paper



Intelligent and Cloud Computing

Sumant Kumar Mohapatra & Srikanta Patnaik

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Part of the book series: Smart Innovation, Systems and Technologies ((SIST,volume 153))

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Chapter EUR 29.95
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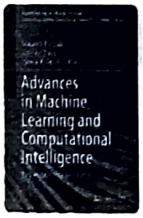
A Study on Digital Fundus Images of Retina for Analysis of Diabetic Retinopathy

Conference paper | First Online: 26 July 2020
pp 445–455 | Cite this conference paper



Advances in Machine Learning and Computational Intelligence

Cheena Mohanty, Sakuntala Mahapatra & Madhusmita Mohanty

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Conferences > 2019 International Conference o

A Framework to Build User Profile on Cryptocurrency Data for Detection of Money Laundering Activities

Publisher: IEEE | Cite This | PDF

Sidharth Samanta ; Bhabendu Kumar Mohanta ; Siba Prasad Pati ; Debasish Jena All Authors

2 Cites in Papers | 533 Full Text Views

Abstract:
Ever since Bitcoin got its popularity, cryptocurrencies becomes the first choice of investors, tech enthusiasts, and criminals. Nowadays it became a prominent tool for money laundering, hawala and criminal payment system. Money laundering is the process of converting illegal black money to legal white money. This can be done by various ways like transferring money from one account to another via multiple intermediate accounts. Detecting this complex activity is very difficult and challenging, because of the high volume of transactions and bitcoins data structure. There are many methods proposed in different papers to detect money laundering in the conventional banking system. In this study, we proposed a framework to convert the bitcoin's transnational data into a similar data frame of bank's user database, which is used by some existing state of the art intelligent systems to detect the abnormal cluster of transactions and user behavior.

Published In: 2019 International Conference on Information Technology (ICIT)
Date of Conference: 19-21 December 2019
DOI: 10.1109/ICIT48102.2019.00081
Date Added to IEEE Xplore: 12 March 2020
Publisher: IEEE
ISBN Information:
Conference Location: Bhubaneswar, India

Electrical Properties of the PVDF-Lead-Free Ceramic-Based Composite Film for Sensor Applications

Conference paper | First Online: 01 December 2020
pp 35–41 | Cite this conference paper

Green Technology for Smart City and Society

Basanta K. Panigrahi, Varsha Purohit, Vijayeta Pal, Sugato Hajra, Kalyani Mohanta & S. K. M. Ali

Part of the book series: Lecture Notes in Networks and Systems ((LNNS,volume 151))

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Evaluation of Different Paradigms of Machine Learning Classification for Detection of Breast Carcinoma

Conference paper | First Online: 28 July 2022
pp 349–356 | Cite this conference paper

Smart and Sustainable Technologies: Rural and Tribal Development Using IoT and Cloud Computing

Nibedita Pati, Millee Panigrahi & Krishna Chandra Patra

Part of the book series: Advances in Sustainability Science and Technology ((ASST))

Automated Classification of Hepatocellular Carcinoma (HCC) Images for Detection of Malignant Tumor Using HOG Technique

Conference paper | First Online: 23 November 2021
pp 267–278 | Cite this conference paper

Proceedings of International Conference on Data Science and Applications

Nibedita Pati, Minu Samantaray, Millee Panigrahi & Krishna Chandra Patra

Part of the book series: Lecture Notes in Networks and Systems ((LNNS,volume 287))

Abstract

Patients with liver cancer have a high mortality rate before the final diagnosis. Computerized medical diagnosis by medical imaging methods may assist significantly in

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Enhanced Feature Matching Algorithm for Medical Image Registration

Conference paper | First Online: 28 July 2022
pp 357–363 | Cite this conference paper

Minu Samantaray, Millee Panigrahi & Krishna Chandra Patra

Part of the book series: Advances in Sustainability Science and Technology ((ASST))

Abstract

In medical imaging technology, image registration plays a vital role. Image registration is a process of transforming the test image to reference image based on different parameters and features. In traditional feature extraction methods the feature points are unevenly distributed for which the redundant features are more. This results to time consuming

Face Mask Detection in Public Places Using Small CNN Models

Conference paper | First Online: 22 April 2022
pp 317–325 | Cite this conference paper

Prabira Kumar Sethy, Susmita Bag, Millee Panigrahi, Santi Kumari Behera & Amiya Kumar Rath

Part of the book series: Smart Innovation, Systems and Technologies ((SIST,volume 286))

Abstract

The spread of coronavirus can be prevented among the people in a crowded place by making face mask mandatory so that the droplets from the mouth and nose would not reach the masses nearby. The negligence of some people, i.e., by not wearing the mask, causes the spread of this pandemic. Therefore, persons who do not wear masks should be tracked at the entrance to public venues such as malls, institutions, and banks. The mechanism proposed warns if the individual is wearing or not wearing the mask. The proposed system is built in a small CNN model to integrate any low-end devices with minimal cost. The small CNN model like ShuffleNet and Mobilenetv2 are evaluated in Transfer Learning and Deep Learning but the Deep Learning model has better

10.1007/978-981-16-9873-6_29#auth-Susmita-Bag

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Automatic Detection of Epileptic Seizure Based on Differential Entropy, E-LS-TSVM, and AB-LS-SVM

January 2022
January 2022
DOI:10.1007/978-981-16-9873-6_35
In book: Intelligent and Cloud Computing (pp.385-392)

Authors:

Sumant Kumar Mohapatra

Srikanta Patnaik
International Institute of Information Tech...

Abstract

The experimental work is to create an accurate machine learning system to detect the epileptic seizure. In this research work, Bonn university data sets are utilized. The differential entropy as feature is extracted from recorded EEG signal using iterative filtering decomposition (IFD) method. Next, the DE feature is inputted to adaptive boost LS-SVM (ABLSSVM) and enhanced LS-SVM (ELSSVM) classifier to classify the EEG

Automated Classification of Hepatocellular Carcinoma (HCC) Images for Detection of Malignant Tumor Using HOG Technique

Conference paper | First Online: 23 November 2021
pp 267–278 | Cite this conference paper

Nibedita Pati, Minu Samantaray, Millee Panigrahi & Krishna Chandra Patra

Part of the book series: Lecture Notes in Networks and Systems ((LNNS,volume 287))

Abstract

Patients with liver cancer have a high mortality rate before the final diagnosis.

A Hybrid Model for Epileptic Seizure Classification Using Wavelet Packet Decomposition and SVM

Conference paper | First Online: 23 May 2021

pp 211–219 | Cite this conference paper

Advances in Intelligent Computing and Communication

Millee Panigrahi, Dayal Kumar Behera & Krishna Chandra Patra

Part of the book series: Lecture Notes in Networks and Systems ((LNNS,volume 202))

Abstract

The synaptic disturbance in the prefrontal portion of the brain induces epileptic seizures. Electroencephalography is a noninvasive tool for diagnosing the different brain disorders

Crime Pattern Detection Using Data Mining

Shyam Varan Nath All Authors

Abstract:
Data mining can be used to model crime detection problems. Crimes are a social nuisance and cost our society dearly in several ways. Any research that can help in solving crimes faster will pay for itself. About 10% of the criminals commit about 50% of the crimes. Here we look at use of clustering algorithm for a data mining approach to help detect the crimes patterns and speed up the process of solving crime. We will look at k-means clustering with some enhancements to aid in the process of identification of crime patterns. We applied these techniques to real crime data from a sheriff's office and validated our results. We also use semi-supervised learning technique here for knowledge discovery from the crime records and to help increase the predictive accuracy. We also developed a weighting scheme for attributes here to deal with limitations of various out of the box clustering tools and techniques. This easy to implement data mining framework works with the geospatial plot of crime and helps to improve the productivity of the detectives and other law enforcement officers. It can also be applied for counter terrorism for homeland security

Published in: 2006 IEEE/WIC/ACM International Conference on Web Intelligence and Intelligent Agent Technology Workshops

Date of Conference: 18-22 December 2006

DOI: 10.1109/WI-IATW.2006.55

Date Added to IEEE *Xplore*: 08 January 2007

Publisher: IEEE

Print ISBN:0-7695-2749-3

Conference Location: Hong Kong, China

1. Introduction

Historically solving crimes has been the prerogative of the criminal justice and law enforcement specialists. With the increasing use of the computerized systems to track crimes [redacted] started helping the law enforcement officers and

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PROCEEDINGS

[NCERA -2022]

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Odisha – 751024

Image Processing for Robotic Arm Motion Control: Techniques and Applications

Milee Panigrahi,Md Ali,Asis kumar Barik

Abstract*— Nowadays there is an increasing need to create artificial arms for different in human situations where human interaction is difficult or impossible.. Here I propose to build a robotic arm controlled by MATLAB. A human hand can handle various objects by his hand, with better capacity and precision. In some hostile conditions, a need arises to replicate the human arm movements by some sophisticated manipulator. This report illustrates the controlling of the movements of robotic arm, in accordance with the movements of RGB color strip (attached to human arm) using real time image processing.

***Keywords*—Matlab, Image Processing, Atmega16, Servo Motor**

I. INTRODUCTION

Nowadays, robots are increasingly being integrated into working tasks to replace humans especially to perform the repetitive task. In general, robotics can be divided into two areas, industrial and service robotics. International Federation of Robotics (IFR) defines a service robot as a robot which operates semi- or fully autonomously to perform services useful to the wellbeing of humans and equipment, excluding manufacturing operations. These robots are currently used in many fields of applications including office, military tasks, hospital operations, dangerous environment and agriculture. Besides, it might be difficult or dangerous for humans to do some specific tasks like picking up explosive chemicals, defusing bombs or in worst case scenario to pick and place the bomb somewhere for containment and for repeated pick and place action in industries. Therefore a robot can be replaced human to do work [1] [2]. Robotics is a rapidly enhancing field. This is an important time in the development of the field, when the technical community and the beneficiary populations are working together to shape the field towards its intended impact on improved human quality of life and more and more versatile and smart robots are being developed. Recent development in the robotics motivated us to do our project. The new trends in robotics research have been denominated service robotics because of their general goal of getting robots closer to human social needs, and this article explains the key role of the robotic arm for the safety of human being in inimical conditions such as working in space, military environment etc.

The human arm is very versatile; however it cannot work under hostile condition. This inspired us to make a articulated robot which will play the role (limited to physical moments of the human arm) of the human arm in hostile conditions without being actually present in that environment [1][2].

ROBOTIC ARM DEFINITION -A robotic arm is a robot manipulator, usually programmable, with similar functions to a human arm. The links of such a manipulator are connected by joints allowing either rotational motion (such as in an articulated robot) or translational (linear) displacement. The links of the manipulator can be considered to form a kinematic chain. The business end of the kinematic chain of the manipulator is called the end effectors and it is analogous to the human hand. The end effectors can be designed to perform any desired task such as welding, gripping, spinning etc., depending on the application. The robot arms can be autonomous or controlled manually and can be used to perform a variety of tasks with great accuracy. The robotic arm can be fixed or mobile (i.e. wheeled) and can be designed for industrial or home applications.

II. PROPOSED SOLUTION

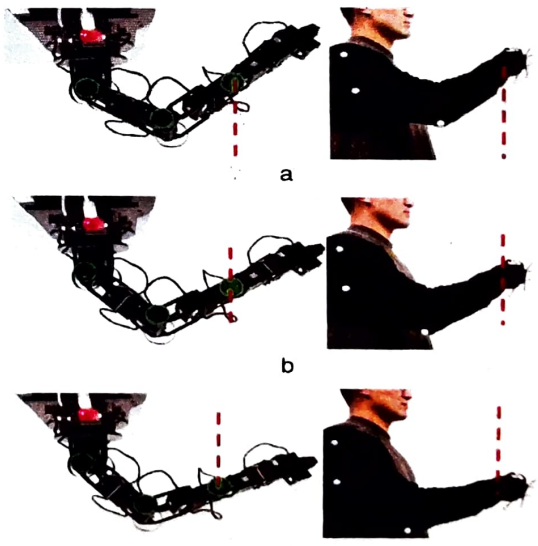

Fig. 1: Robotic Arm Movement

Conventional methods for detecting human arm movements make use of mechanical sensors, such as accelerometer, proximity sensors, which increases the cost and it is dedicated to one person only but my project uses camera and there are no such sensors used.

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Influence of Soft Material Hardness and Hard Material Surface Morphology on Friction and Transfer Layer Formation in Dry Conditions

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Abstract - The morphological features of the surface in both micro and macro levels are important factors governing the tribological behavior of the contacting surfaces. Surface hardness is also an important factor which governs the friction and wear behaviors of the contacting surfaces. Surface morphology of a tool is an important factor as it primarily controls the tribological behavior at the interface which in turn controls the surface finish of products. In the present investigation a pin-on-plate sliding tester was used to identify the effect of surface morphology and hardness on co-efficient of friction and transfer layer which characterizes the tribological behavior. The morphology of mild steel (EN8) plate surfaces were modified by employing three different surface modification methods like grinding (silicon carbide wheel polishing), shot blasting and electric discharge machining methods. Surface roughness parameters which characterize the morphology of the steel plates were measured using a three dimensional optical profilometer. Role of hardness is studied by employing lead, copper and Aluminum (Al6082) pins which were slid against steel plates. Experiments were conducted for plate inclination angles of 1, 1.5,2 and 2.5 degrees. Normal load was varied from 1 to 150N during the tests. Experiments were conducted under dry condition in ambient environment. Scanning electron microscope was used to study the formation of transfer layer on plate and pin surfaces. It was observed that the co-efficient of friction and transfer layer formation were found to depend on the surface morphology of the harder surface. The quantum of transfer layer formation on the surfaces is found to increase with increase in surface roughness.

Keywords: Friction, co-efficient of friction, surface morphology and transfer layer formation.

I. INTRODUCTION

The roughness theory assumed that the frictional force is equal to the force required to climb up the asperity of slope θ and the co-efficient of friction was described as a + function of tan (θ). However, it is clear that asperities undergo deformation due to the sliding action rather than simply sliding over each other. Archard [1] studied the influence of surface roughness on friction behavior of metals and non-metals. The author [1] noticed that effect of surface roughness on friction is largest at linear loads. From the experimental observations, it was found that friction co-efficient increases with surface roughness for hard materials and decreases with surface roughness for soft materials. Nellemann et al. [2] investigated the effect of different surface topography geometries by varying asperity angles and concluded that normal pressure and bulk modulus have great influence on the real area of contact, whereas the asperity slope and friction factor are of minor importance. Whitehead [3] studied the effect of normal load on friction co-efficient for copper sliding against copper in air. The author concluded that copper shows lower friction at low loads as a result of oxide film formation that effectively separates the two metal surfaces, and exhibits high friction at high loads due to break down of the oxide film.

Bowden and Young [4] performed experiments to observe the effect of sliding speed on frictional response of copper. From their experiments, they observed very low friction co-efficient in copper at high sliding speeds. They explained that formation of a thin molten film reduces the friction co-efficient. This thin molten film acts as lubricant between sliding surfaces. Endo and Goto [5] showed that the frictional force between steel surfaces is much higher in argon atmosphere than in ambient conditions. Tsuya [6] investigated the friction of copper in vacuum and air. The author [6] found that the values of the friction co-efficient in vacuum were about 10 times higher than values measured in air. Hiratsuka et al. [7] studied the factors influencing friction and wear between metals and oxides from wear tests on different kinds of pure metals (silver, platinum, copper, magnesium, iron, titanium, aluminium). They concluded that the friction and wear depends on the oxidation activity of the metals, atmosphere oxygen and relative shear strength of the metal-oxide interface. Staph [8] studied the effect of surface texture and surface roughness on scuffing using caterpillar disc tester. Kaura [9] studied effect of surface texture on friction mechanism using a universal testing machine. The results showed that the behavior of surface and the friction during sliding depends on the degree of roughness. Menezes[10] studied the effect of directionality of surface ground marks on friction and transfer layer formation when Al-Mg alloy pins slid on steel plate of different surface roughness and author concluded that both Co-efficient of friction and transfer layer formation depend on ground angle.

Adhesive or abrasive mode of contact, primarily depends on the relative hardness and morphology of surface, is believed to be the reason for formation of transfer layer. The literature emphasis the importance of presence of a soft layer called transfer layer in characterizing both frictional forces and surface finish. The formation of transfer layer is found to be the important parameter which characterizes the behavior of interfacing surfaces.

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Advanced Fall Detection System for Elderly Care Monitoring

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Abstract: ***Different fall-recognition arrangements have been already proposed to make a dependable observation framework for elderly individuals with high necessities on exactness, affectability and specificity. In this paper, an improved fall recognition framework is proposed for elderly individual observing that depends on keen sensors worn on the body and working through purchaser home systems. With treble limits, inadvertent falls can be distinguished in the home social insurance environment. By using data assembled from an accelerometer, cardio tachometer and shrewd sensors, the effects of falls can be logged and recognized from ordinary every day exercises. The proposed framework has been conveyed in a model framework as itemized in this paper***

Keywords: ARM, pulse sensor, GSM, GPS, MMA7660FC MEMS accelerometer, LPC2148 microcontroller

I. INTRODUCTION

As of late, numerous sorts of customer hardware gadgets have been created for home system applications. A customer home system generally contains different sorts of electronic gadgets, e.g. sensors and actuators, so that home clients can control them in a clever and programmed approach to enhance their personal satisfaction [1]. Some illustrative advances to actualize a home system include: IEEE 802.11, Ultra Wide Band (UWB), Bluetooth and ZigBee, and so on. ZigBee is reasonable for buyer home systems in light of the fact that different sensors can be conveyed to gather home information data in a circulated, self-sorting out way with moderately low power. Some run of the mill applications incorporate home computerization, home movement recognition (like fall identification) and home medicinal services, and so forth [2]. Kinsella and Phillips [3] found that the number of inhabitants in 65-andover matured individuals in the created nations will approach 20% of aggregate populace in the following 20 years and will clearly turn into a genuine human services issue soon.

One of most critical and capable employment of a person to deal with old individuals like fantastic moms and granddads who stay at home. There are numerous situations where they are taken consideration by a house keeper since now-a-days each one goes out to carry out an occupation. In the event that the cleaning specialists or workers are not exhibit at home then it turns into a major test to care for the elderly individuals.

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This Anticipate is expected to help such individuals to get the data if any anomalous condition has ascended to their elderly people. In this anticipate we utilize MEMS accelerometer and heartbeat sensor to screen the elderly individuals.

II. RELATED WORK

Wearable construct strategies frequently depend in light of brilliant sensors with implanted preparing. They can be appended to the human body or worn in their articles of clothing, attire or adornments. Zhang, Ren and Shi [4] proposed HONEY (Home human services sentinel framework), a three-stage location plan which comprised of an accelerometer, sound, picture and video cuts. Its development was to distinguish falls by utilizing a triaxial accelerometer, discourse acknowledgment, and on-interest video. In HONEY, once the fall occasion was identified, a ready email was promptly sent and the fall video was transferred to the system stockpiling for further examination. Bagalà et al. [5] gave an assessment of accelerometer-construct fall discovery calculations with respect to certifiable falls. They found that the affectability and specificity on genuine falls are much lower than that in an investigation situation. This rouses specialists to take all the more true situations into thought. Abbate et al. [6], [7] proposed a cell phone based fall identification framework with thought of the speeding up sign delivered by fall-like exercises of day by day lives Bai, Wu and Tsai [8] delineated a framework taking into account a 3-pivot accelerometer implanted in a PDA which had a GPS capacity for the client. In any case, because of the generally high vitality utilization of current advanced mobile phones, their framework must be dynamic for 40 hours with frontal area execution or at most 44 hours in foundation execution, which implies continuation of this framework is the most huge issue.

III. PROPOSED SYSTEM

The capacity of MEMS accelerometer is to distinguish the fall or development of the elderly individuals which is send as a twofold contribution to the miniaturized scale controller framework. The beat sensor is utilized to recognize the heart rate of the elderly people, if the heart rate is more normal heart beat(which is taken as threshold)it rises a hinder to the miniaturized scale controller. We have utilized LPC2148 as a small scale controller which contains ARM processor. If both of the situations said above has happened then the smaller scale controller instantly introduces the GPS which acquires the scope and longitude estimations of the location.

Fabrication of Recent Novel Brake Friction Materials: A systematic Review

Ajaya ku Sahoo

Abstract: ***Theprimarymeansofmobilitytodayarevehicles.For betterbrakingsystembettermaterialsareprovidedfortribopairs. To reduce the cost of the tribo pairs instead of metals, composite materials are used recent days. This topic deals with the combination ofbrakediscandbrakepadwhichisgènerallycalled tribo pair. As a consequence of its distinctive qualities like high fatigue strength, high hardness, high strength, high specific modulus, light weight and low density, the use of Al-SiC Metal Matrix Composites for brake disc & pad have been steadily expanding in recent years. The properties of the metal matrix composite like tensile and compression strength, as well as hardness,are investigated in order to identify theoptimal carbide percent. For brake pad different material composition saremixed together and in powder metallurgy method brake pad fabrication is developed. Previously Asbestos is commonly employ as a material for brake pads in automobiles. Brake pads are subjected to a great deal of friction, which generates a great deal of heat. Asbestos is a better heat absorber and dissipater than other materials. The main downside of asbestos is that it is extremely harmful to human's health. That's why asbestos can be replaced by other materials. This paper mainly covers recent advancement of composite brake friction materials along with comparison of every component with proper validation.***

Keywords: Brake disc, Brake pad, Solid lubricants, Wear, Friction, Al-Si C metal matrix composites, Composite materials, Tribometer: Pin on disc test

I. INTRODUCTION

Asbestos was the most suited and frequently used brake lining material; however, it was banned due to its carcinogenic nature by health and environmental agencies. Researchershavebeenpushedtoproduceasbestos-freebrake frictioncompoundsasaresultoftheasbestosban.Brakepads made of natural fibers or agricultural wastes are seen as the material of the future. Because of its reduced density and better braking stability, aluminium metal matrix composite (MMC)isinvestigatedthefuturematerialforbrakediscsand drums. The braking mechanism is based on the notion of energy conservation. When all of the kinetic energy in the moving equipment is converted to frictional heat, the device comes to a halt. A braking disc or brake drum is an example of a revolving device.

Gray cast iron, carbon-based materials, steel, aluminum-based materials and ceramic-based materials are the five groupsthat the sematerials fall within. Poor braking dynamics are caused by a large amountof un-sprung mass.Because of the aforementioned issue, researchers have been working on the advancement of lightweight brake disc/drum materials from the start in order to improve brake dynamics. Another issuebyusingthegreycastirondiscisthatthecoefficientof friction decreasesin damp situations. Itmightbe whatled to the accident. As a result, a brake material that works well in both dry and wet conditions must be developed [1].

Agricultural wastessúchasbananapeels,aramidfibres,flax fibres, palm wastes and other agricultural wastes are investigated. A bio supplied thermo set resin (When a solid bond is required,resinsarefrequentlyusedinconstructionas adhesives, coatings,or building materials)wasdevelopedand experimented for a up to date use, as a resin matrix of automotive brake pads, employing bio source raw components such as condensed tannins and furfural alcohol. The developed production technique is quite simple [2], [3].

The main purpose of thisstudy isto compare the frictional properties of asbestos based and asbestos free brake pad materials. The whole three friction materials were crushed and moulded into a sample: AF-22 (metallic based), DM-6 (asbestos based) and CL-3003 (fine brass based). Experiments wereconductedwith a specific test setupbased onthePin-on-Discapproach.Threematerials'coefficientsof friction were compared under various sliding velocity and pressure situations[4].

The demands on the material's mechanical and tribological qualities for brake pads grew. Examining alternative materials for brake friction materials as a replacement for asbestos,whichhasnegativeenvironmentalconsequences,as thewearindicationofbrakepadsusingvariousways.Natural composite material contributes significantly to the friction coefficientandisenvironmentallybenign.Frictionmaterials containing no asbestos, such as palm kernel shell, rice husk, banana peel, bagasse, coconut shell, periwinkle shell, and others, are being investigated [5], [6].

Because of itsveryunusual crystalline structure,a synthetic hydrated calcium silicate (Binder) is utilized as one of the components in several friction materials. It has the potential to increase the porosity of the product. Five distinct types of copper-freebrakepadswereproduced,eachhavingthesame compositionbutvariedweightpercentagesofPDparticles(0, 5,10,15,and20)andbarite,aspacefiller,tocompensatefor the variation. Because of its multifunctionality, copper appearstobeanessentialcomponentofnon-asbestosorganic brake friction compounds.

A Novel Fuzzy Logic-Based Sensorless Speed Control Approach for Position Sensorless BLDC Servo Drives

Dr.A.KSahoo, Itishree Behera, Pradumna Nayak

Abstract*: The development of advanced motor drive has been increases rapidly, because of their higher performance and reliability. The Sensorless control of permanent magnet brushless DC motor is presented in this paper. The fuzzy PI controller is developed for controlling the speed of the PMBLDC motor drive. Here the Sensorless control is obtained based on indirect back EMF detection which was justified by the observation that the position sensing is obtained indirectly from zero crossings of terminal voltages. Closed loop speed control is made with estimated speed from the stator voltage, so the drive proposed without any shaft mounted devices like position sensor and speed sensors. The performances of the proposed fuzzy logic controller based PMBLDC motor drive were investigated and the results are compared with conventional PI controller. Also the sensorless result scheme is compared with sensor control. In this Sensorless technique the cost of mechanical components such as sensors and cables are eliminated. The simulated results of conventional and fuzzy controller is compared and results illustrates that the FLC gives better dynamic performance also it is more robust for industrial speed control drive applications.

Index Terms*: Brushless DC motor, fuzzy logic controller, PI controller, MATLAB, Sensor and Sensorless control, Zero cross detection.

I. INTRODUCTION

In recent years BLDC motors are used in high performance drive system because of its advantages. The brushless DC motor has trapezoidal electromotive force (EMF) and quasi rectangular current waveforms. These motors are widely used in industrial applications, robot manipulators and home appliances where speed and position control of motor are required. To sense the rotor position it requires the position sensor such as resolver or encoder or hall sensors. Brushless DC Motors are driven by DC voltage but current commutation is controlled by solid state switches. The commutation instants are determined by the rotor position. The zero crossing of back EMF can be detected to determine the commutation sequence without hall sensors. These methods are based on, using back EMF of the motor detection of the conducting state of freewheeling diode in the unexcited phase, back EMF integration method detection of stator third harmonic voltage components[1]. Back EMF estimation methods typically rely on the zero crossing detection of the EMF waveform. The back EMF estimation is done by sensing the terminal voltages with respect to a virtual neutral point. Detecting the free-wheeling diode conduction in the open phase gives the zero-crossing point of the back EMF waveform. This approach of rotor-position sensing is work in lower speed. The main drawback of this scheme is the requirement of six additional power supplies for the comparator circuits to detect current flowing through the free-wheeling diode [2]. An extended Kalman filter estimator for a brushless dc motor has been developed by Bozotertic and Martin jadric for speed and rotor position estimation but in this method uncertainty in modeling and measurements [3]. Integrating the back EMF waveform of the unexcited phase is another method to extract the position information. This type of approach is less sensitive to switching noise but low speed operation is poor [4]-[6].

This paper presents the indirect back EMF detection which is directly obtained from sensing the terminal voltages by properly choosing the pulse width modulation. This method does not involve any integration since the line voltages are used the requirement of neutral potential has been eliminated [7]-[8]. It also eliminates the common mode noise. The approaches to zero crossing detection were used to start reliably the BLDC motor drive in Sensorless operation.

The Sensorless control based drive by conventional and fuzzy PI controller is presented in this paper. The conventional speed control methods have the following difficulties, it depends on the accuracy of the mathematical model of the system and the expected performance is not met due to the load disturbances [9]-[10]. The fuzzy controller gives the better dynamic performance as well as error reduction. The fuzzy logic technique is used to control the speed of BLDC motor under variable as well as fixed conditions. Recently this technique has been applied to fast response linear servo drive giving superior results [11]-[14].

This paper is organized as follows. The first section gives the introduction about the paper. The second section of the paper is about the proposed Sensorless control of BLDC drive. Design of speed controller with conventional and fuzzy technique is discussed in the third section. The fourth section deals with the simulation work carried through MATLAB environment. The fifth section is about the results and discussions. The final section presents the conclusion and future work of the paper.

II. SENSORLESS SCHEME FOR BLDC MOTOR DRIVE

Manufacturing cost of a BLDC motor drive can be reduced more by elimination of position sensors and speed sensors. Sensorless control is the only choice for some applications where hall sensors cannot function reliably because of harsh environments. Consider a BLDC motor having three stator phase windings connected in star Fig.1. The BLDC motor is driven by a three-phase inverter in which the devices are triggered with respect to the rotor position.

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Optimizing Cooling Performance in Atrium Buildings: Assessment of Energy Conservation Measures and Key Parameters

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Abstract*: Atrium nowadays is applied extensively by professional designers and owners to bring various benefits such as adequate daylight, circulation spaces and surfaces for landscape applications. One of the most significant problems regarding this popular architectural feature is the space conditioning of atriums which has relatively large volume compared with traditional commercial and institutional spaces. This may lead to high energy consumption, if atriums are fully conditioned unless effective design strategies are implemented. It is often very difficult to achieve high thermal comfort and low energy consumption at same time. The potential for energy conservation through severe control of indoor temperatures strengthen the examination of the applicability of the universal values of comfort temperatures recommended by international comfort standards. The aim of this paper to assess energy conservation measures, which supports to conditions of the thermal environment and has contributed to achieve architectural design features. Systematic investigation of factors for energy conservation via literature review helped to reveal about the design features which have influenced in developing comfortable environment; daylighting, acoustics, natural ventilation and thermal control have been identified as environmental factor in rolling out the architectural features in atriums. The result would help to optimize at initial design stage the controlled environment and would provide valuable feedback to help architects and designers to identify the most energy efficient atrium building type.

***Index Terms*: Atrium, Energy Conservation, Daylight, Thermal Environment.**

I. INTRODUCTION

An atrium is a great glassed volume located between indoor and outdoor indicates that the environmental conditions like solar radiation, ventilation and heat energy seem intensified, turning them into spaces with a great environmental potential. Atrium has already become a kind of widespread building form in the architecture. Now, the architectural technology has developed constantly, and people bring natural environment into countries and buildings through atriums. The atrium reinforces the relation of the people and nature.

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It improves environment's quality and people standards.[1] People modify both their behavior and environments to conform to societal expectations of thermal comfort. With the technologies of the modern world, dependence on mechanical systems in the built environment became the norm. Air conditioning technologies have transformed what is regarded as a 'normal' building

In many different parts of the world that these play a critical role in providing expected comfortable thermal environments in modern buildings. Expectations of a comfortable environment are converging worldwide: hot environments are being cold while cold indoor environments are being heated.[2]

In the atriums of public buildings, the physical environment is determined by architectural features in various ways, therefore, an integrated consideration of the overall physical environment is important.[3] The most fundamental concept of successful atrium design is a good understanding of the complexity of the atrium environment. Atriums are the most complex built environments that most designers will encounter. Atriums are composed of more component parts in more complicated relationships than any other building type. No fundamental component of an atrium should be accepted until its relationship with the whole is understood. For every component and every aspect of every component there will be beneficial aspects and also non-beneficial aspects. There will be "pros" and "cons" associated with every element.[4] The complexity of atrium design does not lend itself to prescriptive standards, but sound life safety principles must be incorporated into every atrium design. Good atrium design will maximize the natural environment to promote energy conservation.

Comfort has become synonymous with the consumption of applied energy. The international comfort standard, ANSI/ASHRAE Standard 55 is used extensively as a reference for comfort levels. American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) Standard 55 defines thermal comfort as "that state of mind which expresses satisfaction with the thermal environment." It involves the well-being of the occupants in a particular environment for a particular climate about their capacity to adapt to thermal equilibrium, physiological, psychological and behavioral changes.[5] Thermal comfort is often related to the condition of an individual's mind which expresses satisfaction or dissatisfaction with the thermal environment.

Comparative Analysis of Relative Radiometric Normalization Techniques without Change Sets

Biswa Ranjan Nayak, Sudhanshu Ranjan Lenka

Abstract: ***Satellite images involves radiometric errors as well as geometric errors, these errors should be normalized. For radiometric correction of satellite images there two main methods are useful, absolute radiometric normalization and relative radiometric normalization. Relative radiometric correction has number of applications in weather and climate studies, crop studies, detection and removal of cloud, change detection and so on. The image distortion due to cloud cover is a classical problem of remote sensing imagery. Especially, for non-stationary satellite, it is commonly found in the earth resource observation application. Removing cloud cover from satellite imagery is very useful for assisting image interpretation. Hence cloud detection and removal is very vital in processing of satellite imagery. For detection and removal of cloud relative radiometric normalization using no change set (NC) technique is proposed here in spatial domain as well as in frequency domain. The cloudy image is radiometrically normalized by using reference image of same area, acquired at different date. The visual appearance results, statistical results and histogram results are discussed.***

Index Terms: ***Normalization, No Change Set, Radiometric, Relative.***

I. Introduction

Relative radiometric correction is aimed towards reducing atmospheric and other unexpected variation among multiple images by adjusting the radiometric properties of target images to match a base image, thus it is also called relative radiometric normalization. Relative radiometric normalization is an image based correction method achieved by setting the multi-temporal images into a within multiple scenes can be used to render the scenes to appear as if they were acquired with the same sensor, with the same calibration, and under identical atmospheric conditions, without the need to be absolutely corrected to surface reflectance. Most relative methods assume that radiometric relation-ships between the target image and the base image are linear. A base image, selected to represent some common scale, is not required to be the most accurate reflectance estimation. The relative radiometric normalization method can correct noise deriving from the atmosphere, sensor, and other sources in one process, and is therefore widely used. Generally, relative normalization methods are simpler than absolute normalization methods.

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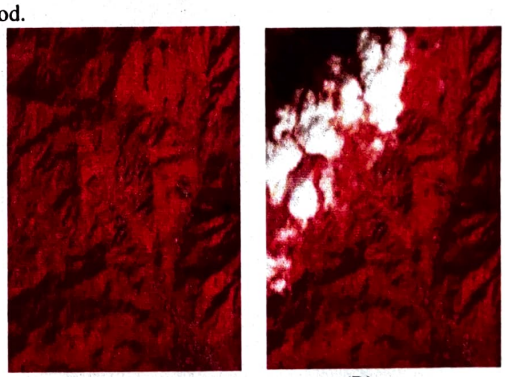
The relative radiometric normalization method is proposed here for detection and removal of cloud. The clouds are a mass of water or ice in the atmosphere that generally produces rain or other forms of precipitation. The detection of clouds in satellite imagery has a number of important applications in weather and climate studies. For many applications however, Clouds are a contaminant whose presence interferes with retrieving atmosphere or surface information. In these cases, the detection and removal of cloud contaminated pixels in satellite imagery is important. The cloud is detected here by using average brightness threshold algorithm, by selecting proper average brightness and threshold value cloud is successfully detected. For the detection of cloud relative radiometric normalization using no change set method is proposed using spatial domain and frequency domain, by calculating normalized correlation clouds are successfully removed and results are discussed by using visual appearances, statistical and histogram analysis.

II. Methodology

The image dataset used in this study is obtained from LANDSAT ETM+ [21]. Figure 1(a) is the reference image and Figure 1(b) is the subject image. The subject image which is cloudy image, radiometrically normalized by using relative radiometric normalization using no change set method.



(A) (B)

Figure (1): (A) reference image, (B) subject image

A. Cloud Detection

For the detection of cloud average brightness algorithm(ABT) is used here. In average brightness algorithm first average brightness of the subject gray image is calculated, on the basis of this average brightness value threshold value is calculated. This threshold value is applied on subject image to separate the cloudy and cloud free regions. The flow of the average brightness algorithm is shown in Figure (2).

Exploring Strategies for Biological Artifact Removal in EEG Data

Aditya Narayan Das, Biswajit Sarangi, Rahul Ranjan

Abstract: ***EEG is an important tool for diagnosis, monitoringand managing various nervous disorder .It is a neurophysiologicmeasurement of the electric activity of bioelectric potential ofbrain. The electrical activity of brain changes in accordance withvariousparametersinside&outsideenvironment.Tostudyhuma n physiology with respect to EEG, bioelelectric potential ofbrains is recorded with help of electrodes. These raw signals arefirstly processed with help of mathematical tools in order to makethem more and more informative. The informative signal thuscalculatedfromrecordingisknownasERP(eventrelatedpotentia l). These ERP data are very specific and it changes witheveryphysiological& biologicalchangeinhumanbody.Theanalysis of ERP has got a wide range of clinical importance. Itserves as a base for diagnosis and detection of various diseases.ERParealsohelpfulindesigningvariousemotionsensorinte rfaces.ButtherearecertainartifactswhicharepresentinrawEEG recording. These artifacts make the ERP contaminated andit introduces inconsistency in the output. Thus it is necessary toeliminate these artifacts from the EEG. The ERP generated fromartifacts free EEG are most suitable for versatile researches andefficient diagnosis. The clinical information thus obtained is ofconsiderableimportanceinidentifyingdifferentpathologies.Artifa ctsinEEGsignalsariseduetotwotypesoffactors;Biologicalfactorsan dExternalfactors.TheBiologicalfactorsarecaused by EOG (Elecro-oculogram), ECG (Electrocardiogram),EMG(Electromyogram)andRespiratory(PN G).TheExternalfactors are caused due to line-interference, leads and electrodes.These noises have an adverse effect on EEG signals and act as ahindrancetoobtainclearcutinformationfromEEGsignals.Thisis a paper scrutinizing different methods for removing artifactswithillustratingcharacteristicsofagoodinformativeEEGsig nal***

Index Terms: ***EEG; EMG; ECG; ocular artifacts; muscularartifacts;spikedetection;Wavelettransform;Neuralnetwo rk.***

I. INTRODUCTION

Electroencephalogram is most important tool to measurethe electrical activity of brain to distinguish between seizureand non-seizure states To record the EEG signals surfaceelectrodes are placed on the scalp of patient with the help ofgeltoincreasetheconductivityofscalpsurface.Afterrecording theEEGsignals,thesesignalsaresenttoanamplifier to increase its magnitude since EEG signals arevoltages of low magnitude .Amplification oflow voltagesmaketheanalysiseasy.Theoutputoftherecordingcome sin the form of waveform which is nothing but oscillations ofcurrent.EEGcanberecordedsimplyintwoways-withstimulus and without stimulus. The EEG recorded withoutinternalorexternalstimulusiscalledspontaneousEEGw hileitiscalledEventRelatedPotential(ERP)whenrecordedwithi nternalor external stimulus.

When these brain potentials are synchronized, it indicatesthe normal state of brain but when there is some abnormalityinbrainelectricalpotential,itindicatesmentaldisord er.Event-relatedpotentialsarepatternedvoltagechangesembeddedintheo ngoingEEGthatreflectaprocessinresponsetoaparticularevent(e.g.,visualorauditorystimuli).ERPs are measured from the same "raw data" (i.e.,scalp electrical activity over time and space) as EEG. ERPreflects sensory, motor, and/or cognitive events in the brain.Itreflectssynchronouspost-synapticpotentialsoflargeneuronalpopulationsengagedininfor mationprocessing.Signal averaging is most common method of extracting thesignal. EEG is sampled for ~1 second after each stimuluspresentation & averaged together across like stimuli. Thetime-lockedsignalemergesinwhichnoiseaveragestozero.[1]Wehave toextracttimelockedactivitybyaveragingthese raw data.EEG signals are basically stimulus relatedprocessing whereas the noise are tonic background activityrelated to ongoing process(level of arousal..etc).There is asevere problem of signal to noise in EEG data .Since EEG isoftheorderof±50microvolts.ButERPareonorderof2-20microvolts.Weoftenwanttodetectdifferenceof1-2microvoltthusprecisionistheimportantprerequisiteinanalysis of ERP.

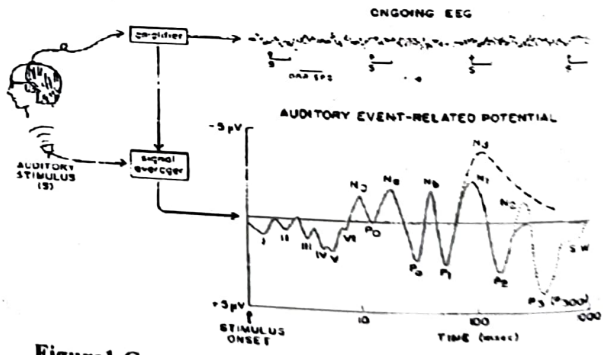


Figure1.GenerationofERPfrom rawEEGsignal

Signal and noise (in each epoch) sum linearly together toproduce the recorded waveform for each epoch (not somepeculiarinteraction).Theevokedsignalwaveshapeattribut ablesolelytothestimulusisthesameforeachpresentation. The noise contributions can be considered toconstitutestatistically independentsamplesofarandomproces s.A large number of researches present a wide varietyofmethodsforidentifyingandremovingartifactsintheEE G.

Evaluation of WEKA's Classification Algorithms on Real-world Data Sets

Madhusmita Mohanty,Monalisa Rout

Abstract: *In this paper, we focused on the construction of classassociationrulesandclassificationmodel.Inknowledgediscovery process association rule mining and classification aretwoimportanttechniquesofdataminingandwidelyusedinvarious fields. In order to mine only rules that can be used forprediction, we modified the well known association rule miningalgorithm - Apriori to handle user-defined input constraints. Thepaper tries to explain the basics of class association rule miningandclassificationthroughWEKA.Thisarticlepresentshowproblems ofclassificationand predictioncanbesolvedusingclassassociationrules. Inthe simulation on WEKA, wehaveused selected classification techniques to propose the appropriateresult from our training dataset. Thus, by using the simulatedresults,wesuggesttheclassification usingassociationrules.*

Keywords:*Associationrule,classassociationrules,classification, Datamining.*

I. INTRODUCTION

Generally, association rule mining [1] and classificationrule mining [2] are the two most popular techniques in datamining. Both of association rules and classification rules arerepresented as *if-then* type rules. However, there are somedifferences between them. Association rules are generallyusedasdescriptivetools,whichgivetheassociationrelationshipstothespecific applicationexperts,

Whileclassificationrulesareusedforpredictingtheunseen testing data. Therefore, the evaluations of the twotype of rules are different. Association rules are typicallyevaluatedbytheapplicationexperts,whileclassificationrules are evaluated by the classification accuracy of testingdata.

In order to discover the strongly correlated rules, manykindsofmeasureshavebeenproposedtoevaluatetheinterestingnessofpatterns,suchasfamoussupportandconfidence[1]. However,therearesomanymeasuresproposed and different measures have different propertieswhich usually lead to different and conflicting results. Somestudies investigate that there is no optimal measure which isbetterthanothersinallapplications[3],[4].Therefore,given a specific application, finding the appropriate measurebecomes the essential problem in data mining. Data miningalgorithmshavewelltakenupchallengesfordataanalysis in large database. Association rule mining is one of the keydata-mining tasksin whichassociabilityof theitemsisdiscoveredintrainingdatabase[1]-[3].Classification is another data mining tasks. The objective ofclassificationistobuildamodelintrainingdatasettopredict the class of future objects whose class label is notknown[4],[5].

The idea of use association rule mining in Classificationwas first introduced in 1997 by[4],[6] and it was named asclass association rule mining or associative classification.The first classifier based on association rules was CBA [7]given by Liu et al. in 1998. Later, some improved classifiersweregiven.Moreresearchisgoingontodesignevenimproved classifiers.

Class association rule mining process can be decomposedin *three*parts.

1. Firstfindfrequentitemsetsandfrequentclassassociation rules.
2. Secondwefindthestrongclassassociationrulesbypruning the weakrules.
3. Designaclassifier[2].

Variousmethods[4],[6],[7]arecommontoaccomplishthe class association rule. In our work, we have simulatedclassassociationrulesandclassifierintheWEKAframework. WEKA is a data mining system developed at theUniversity of Waikato and has become very popular amongthe academic community working on data mining. We havechosen to develop this system in WEKA as we realize theusefulnessofhavingsuchaclassifierintheWEKAenvironment.

II. ASSOCIATIONRULEMIMING

Association rule mining is a widely-used approach in dataminingorknowledgediscovery.Associationrulesarecapableofrevealingallinterestingrelationshipsinapotentially large database. The abundanceof informationcaptured in the set of association rules can be used not onlyfor describing the relationships in the database, but also fordiscriminatingbetweendifferentkindsorclassesofdatabaseinstances[8]. An association rule isdefined as

"Let $I = \{i_1, i_2, \ldots, i_m\}$ be a set of literals, called items. LetD be a set of transactions(database), where each transactionT is a set of items such that TI. TID indicates a uniquetransaction identifier.An association rule is an implicationof the form $X \rightarrow Y$, X I and Y I and $X \cap Y = \Phi$. X iscalled antecedent while Y is called the consequence of therule."

There two measurements in association rule mining are*support*and*confidence*.Thesupportcorrespondstothefrequency of the pattern while confidence indicates rule'sstrength.

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A Novel Tricolor Attenuation Model for Shadow Detection

Madhusmita Mohanty,Monalisa Rout

Abstract: ***The shadows are regarded as obstacles in remote sensing image analysis. With high-resolution remote sensing images developed, especially in urban area, shadow detection playsamuchmoreimportantroleinmanyapplications.Shadows, the common phenomena in most outdoor scenes, bring many problems in image processing and computer vision.In this paper ex-tracting shadows froma singleoutdoorimageispresented. Based on image formation theory relationship between shadow and its nonshadow background is derived based on image formation theory. The parameters of the Tri-color Attenuation Model arefixedby using thespectral powerdistribution (SPD)of daylight and skylight, which are estimated according to Planck's blackbody ir-radiance law. The proposed shadow detection algorithm when compared to previous methods can extract shadows significantly than the existing methods.***

Keywords: ***Remotesensing,shadow detection, tricolor attenuation model (TAM).***

I. INTRODUCTION

Shadow detection is an important aspect of most object detection and tracking algorithms. Shadows and shadingsinimagesoccurwhenobjectsoccludelightfroma light source and they appear as surface features. Shadow detection and removal over the past decades covers many specific applicationssuch as traffic surveillance [1, 2], face recognition[3,4,and5]andimagesegmentation[6].Object shadow detection has been an active field of research for several decades. Most researches focus on providing a general method for arbitrary scene images and thereby obtaining "visually pleasing" shadow free images.Many techniques [7,8, and9]have beenproposedforremoving shadows from images. This paper aims to give a relatively comprehensive study on the current methods of detecting and removing shadows in both still and moving images. In general,shadowscanbedividedintotwomajorclasses:Self shadow and Cast shadow.

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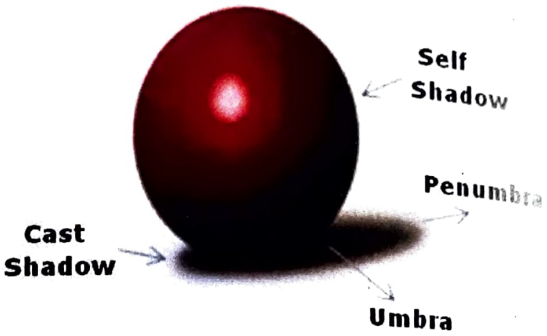

Figure1:Typesof shadowin image

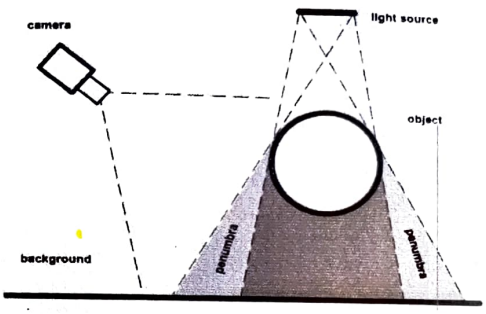

Figure2:castshadowregioninimage

Sinceskylightisacomponentofdaylight,pixelintensityin shadow must be lower than that in non-shadow background. As detecting shadows from image sequences has made great progress, detecting themfrom a single image remains a difficult problem. In contrast to multi images, shadow detection in still image is more difficult due to less information available. Wu et al. employ the Bayesian approach and shadow matting [10] to extract shadows in a single image, but their method requires user interaction as input. Nielsen et al. [11] employ channel for soft shadow segmentation, but it requires to manually hand pick a sunlit surfaceanditsshadowcounterparttoinitializethcoverlay color.The method proposed in [12] can identify and remove shadowsfromasoleoutdoorimage,butitrequires user-suppliedregions.Thus,thesemethodscannotbeusedin totally automatic computer vision tasks. In [26], the authors employ Markov random field model to detect shadows automatically in a single color image. However,thismethodcannotworkon complex scenes.

Themethod called "color invariance" has been extensively researched in recent years. Color invariance features arenotsensitivetoillumination changestosomeextent. Colorinvariance features mainlyinclude YUV[4], normalized RGB [7], hue (H) and saturation (S) [13], and [14].

Depth-Aware Image Compression for Aesthetic Preservation

Aditya Narayan Das, Rahul Ranjan

Abstract: ***Realistic simulation of distance blurring, with the desirablepropertiesofaimingtomimicocclusioneffectsasoccur in natural blurring, and of being able to handle any number of blurring and occlusion levels with the same order of computational complexity will help in compressing the image. Imagecompressionmaybelossyorlossless.Losslesscompression is preferred for archivalpurposes andoften for medicalimaging, technical drawings, clip art, or comics. This is because lossy compression methods, especially when used at low bit rates, introduce compression artifacts. Lossy methods are especially suitable for natural images such as photographs in applications where minor (sometimes imperceptible) loss of fidelity is acceptabletoachieveasubstantialreductioninbitrate.Thelossy compression that produces imperceptible differences may be called visually lossless. the concept of depth-based blurring to achieve an aesthetically acceptable distortion when reducing the bitrateinimagecodingisproposedwhichisvitalinlosslessimage compression. Depth-based blurring reduces high-frequency components by mimicking the limited depth of field effect that occurs in cameras. The Proposed algorithm performs better than theexistingspatialdomainmethods,significantlytocopewiththe challenge of avoiding intensity leakage at the boundaries of objects when blurring at different depth levels.***

I. INTRODUCTION

A blur filter applied in different amounts to each pixel in theimage,accordingtoadepthmask.Thiseffectcanbeused to simulate a narrow depth-of-field; lens-shaped edge defocusingortilt-shifteffects.*Thedepthmaskdefineswhich pixels in the image will be blurred, as well as the relative amount of blurring that will occur. Brighter pixels in the depth mask correspond to the highest amount of blur. The maximumamountofblurappliedbythealgorithmisdefined bythe"Radius"parameter,anditaffectspixelsinthedepth mask [1], [2], [3].*

Techniques for synthesizing depth of field can be classed aseithermulti-passapproachesorpostfiltering.Inmulti-passapproaches,high-accuracytechniquessuchasray tracing are repeated from slightly different directions and averaged [4]. Al-though they are high quality, multi-pass approaches generally involve heavy computational cost. In post filtering, the rendering output itself is subjected retrospectively to synthetic depth blur-ring [5]. Postfiltering approaches can in turn be grouped into *gather* or *scatter* methods.Techniqueswhichemploythegathermethod

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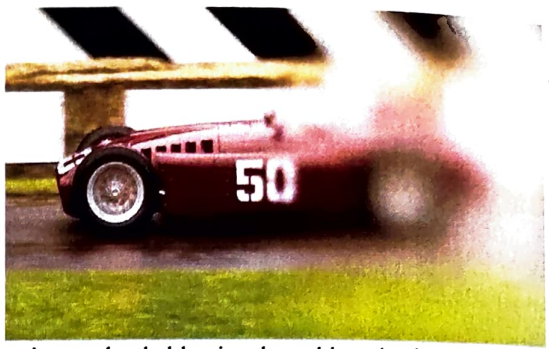

approximate depth blurring by taking the local average of pixelvaluesaroundthedesiredlocation.Thisinherently leads to *intensity leaks* [6],[7],[8] as theintensityfromsharp source pixels is spread over surrounding background that they should not influence. Approaches that employ the *scatter*methodspreadtheintensityofeachsourcepixelover an area. However, due to speed, scatter methods are not regarded as the choice for real-time depth blurring [9].

Circular point spread functions are developed and to cater for partial occlusion, by applying a gradual occlusion of the blur of far objects when the boundaries of nearer objects are themselves blurred.

First, the corner list array is created as follows. For each pixellocationxintheoriginalimage,theintensity $I=G(\mathbf{x})$ andblurlevel $b=B(\mathbf{x})$ areread.Thespreadintensity is paired $v=I/(2b+1)^2$ with occlusion level $w=\Omega(\mathbf{x})$. The pair (v,w) is appended tofour lists, associated with the fourcorner points $c_{11}(\mathbf{x}b)$, $c_{12}(\mathbf{x}b)$, $c_{21}(\mathbf{x}b)$ and $c_{22}(\mathbf{x}b)$ exceptforcorner points which lie outside the image doman D, which are ignored.

Thelookupstructureisthekeypartofthealgorithmandis the part which reduces the complexity of the occlusive selective blurringfrom $O(N^2)$ to $O(\log(N)N)$. The structure takes as inputs the location of a pixel (by row and column) and an occlu-sion level and outputs the sum of all of the entrieswithahigherocclusionlevelinthecornerlistarrayin the rectangle bounded by that pixel and the top-left pixel of the image. This is created first by partitioning the image domain into a hierarchy of groups of adjacent rows of pixel locations, with sets of one row at the bottom level of the hierarchy, then sets of two adjacent rows at the next level, then sets of four adjacent rows, then sets of eight adjacent rows, etc. For each level of the hierarchy, and each row group,a1-Darray(onelocationforeachhorizontalposition) oftreesisconstructed(by *createstruct*inAlgorithm,eachof whichcanbeusedtoefficientlylookupthesumofallvalues inthatrowgrouptotheleftofthegivencolumn.Thesetrees are referred to herein as *occlusive sum lookup trees*. The lookup tree for each location in each of these1-Darrayscan be considered to hold an array of partial sums, one for each occlusion level [10].

Measuring Synchronization in Coupled Systems via Visibility Graph Similarity Analysis

Arpita Nibedita, Ranjeep Pradhan

***Abstract*:** *Synchronizationisdefinedasinterdependenciesamong two or more time series. Recent advances on informationtheoryandnon-lineardynamicalsystemshasallowedustoinvestigatedifferenttypesofsynchronizationmeasuresondifferenttimeseriesdatasuchElectroencephalogram(EEG),Magnetoencephalogram(MEG)andothernon-stationarysignals.However,these kind of statistical interdependencies arealsoprominentlyobservedinthecoupledchaoticsystemsoccurringinnature.Inmostcoupledsystemstheinternalvariantsandtheinterdependenciesamongtheirsubsystemsarenotaccessible.Therefore,to measurethestatisticalinterdependenciesamong the coupled systems, different non-linear approaches hasbeenadoptedthateffectivelydeterminestheamountofsynchronizationbetweenthedynamicalsystemsunderinvestigation.Inthispaper therecentlyproposedsynchronizationmeasurementperformanceoftheVisibilityGraphSimilarity(VGS)10,11 is computed for two coupled identical Hénon map,two non-identical coupled rössler and Lorenz system over theentire time domain & also compared against linear correlation toestimatethesuperiorityof themethod.*

***IndexTerms*:** *Coupledmodelsystems,Dynamicsystems,Nonlinearsystem,Synchronization.*

I. INTRODUCTION

The study Synchronization between dynamical systemshasbeenanactivefieldofstudyforlasttwodecades.Synchronizationphenomenainchaoticsystemshaveattracted muchattention in the fields of nonlinear dynamicalsystems and havefound applications in areas such as laserdynamics,solidstatephysics,electronics,biologyandcommunication.

Inmostcoupledsystemstheinterdependenciesamongtheirsubsystemsarenoteasilyaccessible.Forthispurpose,crosscorrelationandcoherencefunctionshavebeenusedtomeasuretheinterdependencybetweentwotimeseriesintermsoftimeandfrequency, respectively.Thesetwomeasures,however,detectonlythelinearinterdependencies.Inordertoovercometheaforementioneddeficiency,anewandeffectivemethod,calledVisibilityGraphSimilarity(VGS)isproposedin10,11.VGSisamethodbasedonthec oncept of generalized synchronization and detectsnonlinearandlineardependenciesbetweentwosignals. VGSreliesonthedetectionofsimultaneouslyoccurringpatterns, whichcanbecomplexandwidelydifferentinthetwosignals.The VisibilityGraph(VG)canefficientlyconverttimeseriestoagraph where the order of the VG's vertexes (nodes) is thesame as the order of sample times of the time series. It isshownin10,11thatthetopologyoftheVGofatimeseriesisrelated to complexityandfractality ofthetimeseries.

Intherestofthepapertheperformanceof VGSoneffectively determining the interdependencies of dynamicalsystemsiscomputedondifferentchaoticsystemslike coupled identical Hénon map, non-identical coupled rösslerandLorenzsystemwhicharealsousedbyT.Kreuzet.alin7 for comparing different approaches of synchronization oncoupled chaotic systems.The variation of synchronizationindex against coupling coefficient& signal to noise ratio iscomputed by VGS for all three coupled chaotic systems &theirresultsarealsocomparedagainstlinearcorrelationsinceVGSeffectivelycomputescross-correlationamongDegreeSequences(DS)ofthenodesofthevisibility graph.

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II. VISIBILITYGRAPHSIMILARITY

ThedeterminationofVisibilityGraphSynchronizationisa6step processasmentionedin10,11.

A. Reconstructionoftrajectories ina statespace.

The Visibility Graph Similarity (VGS) attempts to computethe number of similar patterns in time series of the coupledsystems which are repeated concurrently. The measurementof similarity is a statistical likelihood with a logical decisionmakingthatjustdetermineshowmuchthepatternsaresimilar to one another to a set threshold value irrespective ofhowmuchactualsimilarityactuallyexistsbetweenthem.Allg eneralized synchronization including the visibility graphsimilarity method under considerationrequire reconstructionof trajectories in a state space based on the chaos theory andTakensreconstructionofatimeseriestomeasuretheinterdependencies of the dynamics of the systems whichgeneratethetimeseries.Reconstructionoftrajectoriesbased on the chaos theory requires the determination of a timedelay or lag time (T) and an embedding dimension (d) tocreatethestatespace.Insuchastatespacethenthstate, $X_{k,n}$,ofthe kth trajectory, X_k,isrepresentedasfollows:

$X_{k,n}=x_{k,n},x_{k,n+T},x_{k,n+2T},\ldots\ldots\ldots,x_{k,n+(d-1)T}$

where$x_{k,n}$isthenthpointofthekthtimeseries(k=1,2,... ,M); when M time series or systems are coupled together).Therefore, each trajectory contains N = R − (d − 1)T states;whereRisthenumberofsamplingpointsofeachtimeseries .The time delay and embedding dimension are determined sothat the reconstructed trajectories in the new state space arenot folded to avoid loss of information. In VGS studies, dand T are taken to be the same for all thetime series in orderto beable tocompare thesimilarity oftheirstates.

Exploring Object-Oriented Real-Time Lossless Video Compression: A Comprehensive Review

Shyamalendu Pati, Rani Dubey

Abstract- ***This paper describes video compression in real time. The aim is to achieve higher compression ratio in lossless compression. Efficient compression is achieved by separating the moving objects from stationary background and compactly representing their shape, motion, and the content. Video compression techniques are used to make efficient use of the available bandwidth. Lossless means that the output from the decompressor is bit-for-bit identical with the original input to the compressor. The decompressed video should be completely identical to original. In addition to providing improved coding efficiency in real time the technique provides the ability to selectively encode, decode, and manipulate individual objects in a video stream. The technique used results in video coding that a high compression ratio can be obtained without any lossin data in real time.***

Index Terms: Compression Ratio, Motion Detection, Video Compression.

I. INTRODUCTION

In this paper we are proposing a technique by which we can separate the stationary and moving objects in real time so as to result in a lossless video compression. Lossless video compression means that the compressed file after decompressing will be exactly same as the original video. Now a days the techniques which are being used for video compression are all lossy compression type unlike ours "Object repetition based video compression".

In this paper we present an object repetition based videocoding approach that retains the relative advantages of both the hybrid based and block-based coders while minimizing the drawbacks of both. By employing motion segmentation techniques to separate moving objects from stationary backgrounds, the coder optimizes the bit allocation to those areas that are changing most frequently. This technique also provides the ability to selectively encode, decode, and manipulate individual objects in a video stream and, hence, supports content-based functionalities such as object scalability and object manipulation easily.

II. METHODOLOGY OF WORK

- First of all we are going to read a video file in our MATLAB2011 a based algorithm to start compression with that. Our input file may be of either in AVI or MPEG format.
- Both of these universal formats have the information regarding FPS and size of the images it contains. Than our next goal is to determine the stationary objects in each frame corresponding to the next frames so that we will only store non stationary objects for the very next frame and all these data will be stored in a watermarked corner for every frame having its own information which is very much needed at the time of decompress video processing.
- We are referring a base paper in which we have this work for video compression technique but not very much good for the real time video compression techniques either have a demerit of loosely techniques like DCT and DWT but here we are going to present a noble technique in which we will use object position change finding algorithm to get our video process in real time and having lossless decompressions.

III. LITERATURE REVIEW

In this section, we are presenting the research work of some prominent authors in the same field and explaining a short description of various techniques used for video compression.

1:G.Suresh, P.Epsiba, Dr.M.Rajaram, Dr.S.N.Sivanandam **"A Low Complex Scalable Spatial Adjacency Acc-DctBased Video Compression Method",2010** proposed a video compression approach which tends to hard exploit the temporal redundancy in the video frames to improve compression efficiency with less processing complexity. Produces a high video compression ratio. Many experimental tests had been conducted to prove the method efficiency especially in high bit rate and with slow motion video. The proposed method seems to be well suitable for video surveillance applications and for embedded video compression systems.

2:Tzong-Jer Chen, Keh-Shih Chuang **"A Pseudo LosslessImage Compression Method",2010** present a lossless compression which modifies the noise component of the bit data to enhance the compression without affecting image quality. Data compression techniques substantially reduce the volume of the image data generated and thus increase the efficiency of the information flow. Method is information lossless and as a result, the compression ratio is smaller.

3:QiangLiu,RobertJ.Sclabassi,MarkL.Scheuer,andMingui Sun **"A Two-step Method For Compression ofMedicalMonitoringVideo"2010** present a two-step method to compress medical monitoring video more efficiently. In the first step, a novel algorithm is utilized to detect the motion activities of the input video sequence. Then, the video sequence is segmented into several rectangle image regions (video object planes), which contain motion activities restricted within these windows. In the second step, the generated video object planes are compressed. Our experimental results show that the two-step method improves the compression ratio. Significantly when compared with the existing algorithms while still retaining the essential video quality.

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BER Analysis of OFDM Systems with Dynamic Modulation Adaptation

Manas Ranjan Choudhury, Arpita Nibedita, Partha Sarathi Mohapatra

Abstract: ***Orthogonal Frequency Division Multiplexing is anemergingbroadbandmulti-carriermodulationscheme.Therobusthigh-bandwidthcapabilitiesoforthogonalfrequencydivision multiplexing confer immediate advantages on wirelessproductsthatsystemsaredoingso.OFDMisalsobeingconsidered for use in 4G cellular systems. A well-known problemofOFDMisitssensitivitytofrequencyoffsetbetweenthetransmittedandreceivedcarrierfrequencies.Thisfrequencyoffset introduces inter-carrier interference in the OFDM symbol.Thisprojectinvestigatesadaptivemodulation&ICIself-cancellation methods for combating the effects of channelfading & ICI respectively. These methods are compared in termsofbiterrorrateperformance,bandwidthefficiency,andcomputational complexity. We propose an adaptive modulationmethod in order to combat channel with deep fading throughsimulations,itisshownthatthistechniqueiseffectiveinmitigatingtheeffects of ICI.***

Index Terms—OFDM,4G,ICI.

I. INTRODUCTION

OrthogonalFrequencyDivisionMultiplexing(OFDM)isspecial form of multi-carrier transmission technique in which asinglehighratedatastreamisdividedintomultiplelowratedatastreams.Thesedatastreamsarethenmodulatedusingsubcarriers which are orthogonal to each other. In this way thesymbol rate on each sub channel is greatly reduced, and hencetheeffectofintersymbolinterference(ISI)duetochanneldispersion in time caused by multipath delay spread is reduced.Guard interval can also be inserted between OFDM symbol toreduceISIfurther.Theorthogonalitybetweensubcarrierscanbemaintained,eventhoughthesignalpassesthroughatime-dispersivechannelbycyclicallyextendingtheOFDMsymbols into guard interval. In an OFDM transmission system,eachsubcarrierisattenuatedindividuallyunderthefrequency-selectiveandfastfadingchannel.Thechannelperformance may be highly fluctuating across the subcarriersandvariesfromsymboltosymbol[1].Ifthesamefixedtransmission scheme is used for all OFDM subcarriers, the errorprobability is dominated by the OFDM subcarriers with highestattenuationresultinginapoorperformance.Therefore,incaseoffrequency selective fading the error probability decreases veryslowlywithincreasingaveragesignal-to-noiseratio(SNR)[2].Thisproblemcanbemitigatedifdifferentmodulationschemes are employed for the individual OFDM subcarriers.Unlikeadaptiveserialsystems,whichemploythesametof parametersforalldatasymbolsinatransmissionframe,adaptiveOFDMschemeshavetobeadaptedtotheSNRoftheindividualsubcarriers.Thiswillsubstantiallyimprovetheperformanceanddatathroughputofan OFDMsystem.Forexampleifthesubcarriers that will exhibit high bit error probabilities in theOFDM symbol to be transmitted can be identified and excludedfrom data transmission, the overall BER can be improved inexchangeforaslightlossofsystemthroughputOFDMalsohassome drawbacks. Because OFDM divides a given spectralallotment into many narrow subcarriers each with inherentlysmallcarrierspacing,itissensitivetocarrierfrequency errors. which may be caused by Doppler shift in the channel,or by the difference between the transmitter and receiverlocal oscillator frequencies. This frequency offset introducesinter-carrier interference in the OFDM symbol. We proposean adaptive modulation method in order to combat channelwithdeepfading.Bitsareallocatedoneachsubcarriersothatthe overall transmit power is minimized under a fixed biterrorrate(BER).Thisprojectinvestigatesadaptivemodulation & ICI self-cancellation methods for combatingtheeffectsofchannel fading&ICIrespectively.

This paper is organized as follows: The system model isdescribed in section II. The ICI canceling modulation anddemodulation usedin the simulations are presentednext.SectionIIIgivestheidea abouttheadaptivemodulationtechnique used. Section IV discusses the simulation results.Finally conclusionsaremade insection V.

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II. SYSTEMMODEL

A.AnalysisofInter-CarrierInterference

Inthisproject,thefrequencyoffsetismodeledasamultiplicativefactor introduced inthe channel

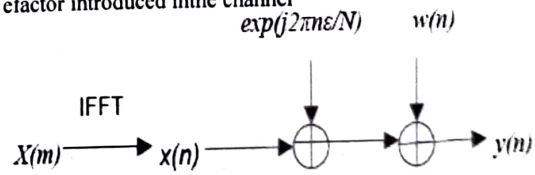

Figure1FrequencyOffsetModel

Thereceived signalisgivenby,

$$y(n)=x(n)e^{\frac{j2\pi n\varepsilon}{N}}+w(n) \quad (1)$$

Whereεisthenormalizedfrequencyoffset,andisgivenby ΔfNT_s.Δfisthefrequencydifferencebetweenthetransmitted andreceivedcarrierfrequenciesand$T_s$isthesub-carrier symbolperiod.$w(n)$istheAWGNintroducedinthechannel.The effect of this frequency offset on the received symbolstreamcanbe$_{th}$understoodbyconsideringthereceivedsymbol $Y(k)$on the$k$sub-carrier.

PROCEEDINGS

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Exploring CAN Sniffing Techniques: A Study in Design and Development

Rabiteja Patra , Ajaya ku Sahoo, Asis Ku Barik

Abstract- ***Controller Area Network (CAN) is used extensively in automotive applications, with in excess of 400 million CAN enabled microcontrollers manufactured each year. CAN messages could be calculated and hence guarantees provided that message response times would not exceed their deadlines. This seminal research has been cited in over 200 subsequent papers and transferred to industry in the form of commercial CAN schedulability analysis tools. These tools have been used by a large number of major automotive manufacturers in the design of in-vehicle networks for a wide range of cars, millions of which have been manufactured over the last 8 years. This paper shows that the original schedulability analysis given for CAN messages is flawed. It may provide guarantees for messages that will in fact miss their deadlines in the worst-case. This paper provides revised analysis resolving the problems with the original approach. Further, it highlights that the priority assignment policy, previously claimed to be optimal for CAN, is not in fact optimal and cites a method of obtaining an optimal priority ordering that is applicable to CAN. The paper discusses the possible impact on commercial CAN systems designed and developed using flawed schedulability analysis and makes recommendations for the revision of CAN schedulability analysis tools. The CAN Sniffer Tool is a simple to use low cost CAN bus monitor which can be used to develop and debug a high speed CAN network. The tool supports CAN 2.0b and ISO11898-2 and a broad range of functions which allow it to be used across various market segments including automotive, industrial, medical and marine. The toolkit comes with all the hardware and software required to connect a CAN network to a PC. In CAN bus, the two CAN channels can send/receive CAN messages either with extended or standard ID. All messages received by the CAN interface are sent via UART to the serial port of PC. On the PC the CAN-messages get collected and ordered by CAN-ID. In CAN the communication is done in two-wire, the CAN sniffer can receives the messages based on arbitration process.***

Keywords: CAN, UART, CAN-ID, PC.

I. INTRODUCTION

Controller Area Network (CAN) is a serial communications bus designed to provide simple, efficient and robust communications for in-vehicle networks. CAN was developed by Robert Bosch GmbH beginning in 1983 and presented to a wider audience at the Society of Automotive Engineers (SAE) Congress in 1986 – effectively the "birth of CAN". In 1987 the first CAN controller chips were released by Intel (82526) and Philips (82C200). In the early 1990s Bosch submitted the CAN specification [20] for standardisation, leading to publication of the first ISO standard for CAN (11898) in 1993. Mercedes was the first automotive manufacturer to deploy CAN in a production car, the 1991 S-class. By the mid 1990s, the complexity of automotive electronics was increasing rapidly. The number of networked Electronic Control Units (ECUs) in Mercedes, BMW, Audi and VW cars went from 5 or less at the beginning of the 1990s to around 40 at the turn of the millennium. With this explosion in complexity traditional point-to-point wiring became increasingly expensive to manufacture, install, and maintain due to the hundreds of separate connections and tens of kilograms of copper wire required. As a result CAN was rapidly adopted by the cost-conscious automotive industry, providing an effective solution to the problems posed by increasing vehicle electronics content. Following on from Mercedes other manufacturers including Volvo, Saab, BMW, Volkswagen, Ford, Renault, PSA, Fiat and others all adopted CAN technology.

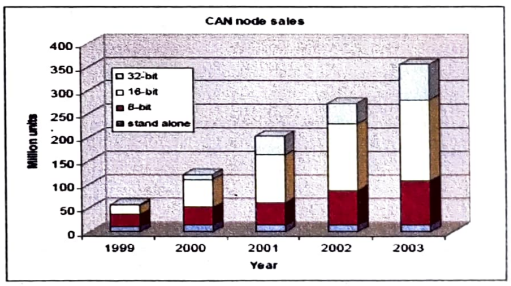
As a result of the wholesale adoption of CAN by the automotive industry, sales of CAN nodes (8, 16 and 32-bit microcontrollers with on-chip CAN peripherals) grew from just under 50 million in 1999 to over 340 million in 2003

By 2004 there were at least 15 silicon vendors manufacturing, in total, over 50 different microprocessor families with on-chip CAN capability.

Today almost every new car manufactured in Europe is equipped with at least one CAN bus. In the United States, the Environmental Protection Agency has mandated the use of CAN, for On Board Diagnostics, in all cars and light trucks sold in the US from model year 2008 onwards.

Message	Priority	Period	Deadline	TX time
A	1	2.5ms	2.5ms	1ms
B	2	3.5ms	3.25ms	1ms
C	3	3.5ms	3.25ms	1ms

CAN Messages Highlighting Flawed Analysis



Sales of Microcontrollers with on-chip CAN Peripherals

Automotive Applications

In automotive applications, CAN is typically used to provide high speed networks (500Kbits/s) connecting chassis and power-train ECUs, for example engine management and transmission control. It is also used for low speed networks (100 or 125Kbits/s) connecting body and comfort electronics, for example door modules, seat modules and climate control. Data required by ECUs on different networks is typically gatewayed between the different CAN buses by a powerful ECU connected to both.

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Dissimilar Metal Welding of AISI 4130 Steel To 18% NI Mararing Steel

A K Nayak,Tusar kanta Kumbhar,Rabiteja Patra

Abstract: ***Maraging steels are ultra-high strength and high toughness steels used in the rocket motor casing, leaf springs, landing gears etc. They obtain their strength and toughness from precipitation hardening. The strength of AISI 4130 steels is obtained by austenizing followed by quenching and tempering. They obtain their strength from martensite phase transformation. As the heat treatment for the two steels are different due to different hardening mechanisms, an optimum heat treatment needs to be developed to obtain maximum strength for the dissimilar welding of this two materials. Weldments are often made from dissimilar metals in order to satisfy different requirements for performance. A successful weld between dissimilar metals is that it possesses sufficient tensile strength and ductility so that the joint will not fail. In the present work, 18%Ni (250) maraging steel was joined to AISI 4130 low alloy steel by TIG welding with W2 maraging steel filler wire. These dissimilar welds were realized with two different material conditions. The first condition is welding of solutionised maraging steel to hardened and tempered AISI 4130 steel. The second condition is welding of aged maraging steel to hardened and tempered AISI 4130 steel. The dissimilar welds we subjected to non-destructive testing i.e. X-ray radiography and subsequently subjected to different post weld heat treatment cycles depending on the initial material condition. The joints were offered for microstructure and mechanical property evaluations such as ultimate tensile strength, yield strength and % elongation. The model of the specimen was created using the CATIA software. The model was meshed using software ABAQUS. Boundary conditions were given on the finite element model through ABAQUS.***

Keywords: Dissimilar Metal Welding, AISI 4130, MDN 250, 18% Ni Maraging Steel.

I. INTRODUCTION

18% Ni Maraging steels are a class of very low-carbon high alloy steels exhibiting a unique combination of ultra-high strength, excellent fracture toughness and good weldability. The alloy gains its strength from the precipitation hardening of its soft iron-nickel martensite microstructure. As a consequence, it possesses a combination of strength and toughness superior to other high strength steels by employing a relatively simple heat treatment.

AISI 4130 steels come in the category of high strength medium carbon low alloy steels. It is one of the most widely used steels in aircraft construction because of its combination of moderate strength and reasonable ductility in the quenched and tempered conditions. 4130 steels are strengthened by quenching to form martensite and tempered to the desired strength levels.

In the present work, 18% Ni (250) maraging steel was joined to AISI 4130 low alloy steel by TIG welding with W2 maraging steel filler wire. These dissimilar welds were realized with two different material conditions. The first condition is welding of solutionised maraging steel to hardened and tempered AISI 4130 steel. The second condition is welding of aged maraging steel to hardened and tempered AISI 4130 steel. The dissimilar welds were subjected to non-destructive testing i.e., X-ray radiography and subsequently subjected to different post weld heat treatment cycles depending on the initial material condition. The joint characterization studies include microstructural examination and mechanical property evaluations such as ultimate tensile strength, yield strength and % elongation. The model of the specimen was created using the CATIA software. The model was meshed using software ABAQUS. Boundary conditions were given on the finite element model through ABAQUS.

II. OBJECTIVE

War Head Section	**P1 & P2 Motors**	**Nozzle Scurt**
AISI 4130	**MDN 250**	**AISI 4130**

Circumferential welds

The two materials are selected for the fabrication of rocket motor assembly are AISI 4130 and 18% Ni Maraging steels. The War Head Section (WHS) and Nozzle Scurt are made of AISI 4130 steel and P1, P2 Rocket motors are made of 18% Ni maraging steel MDN 250.

The fabrication of total rocket motor assembly involves welding of WHS to P2 rocket motor and P1 rocket motor to Nozzle Scurt where in dissimilar welding of Maraging steel and AISI 4130 steel with 1.3mm thickness is the primary requirement.

The prime requirement from the designer is the dissimilar weldment between 4130 steel and maraging steel in the final condition should possess yield strength of **900 MPa**.

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Integration of Wind Energy Conversion Systems with Grid: Performance Evaluation, Analysis, and Simulation

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Abstract: ***This paper deals with permanent magnet synchronous generator (PMSG) based wind energy conversion system (WECS) integrated with grid with two back to back connected converters with a common DC link. The machine side converter is used to extract maximum power from the wind. In this paper a study of WECS is done by using a constant speed wind turbine and 2 mass drive train in Matlab. Moreover, by maintaining the dc link voltage at its reference value, the output ac voltage of the inverter can be kept constant irrespective of variations in the wind speed and load. An effective control technique for the inverter, based on the pulse width modulation (PWM) has been developed to make the line voltages at the point of common coupling.***

Keywords: ***Permanent magnet synchronous generator (PMSG), Wind energy conversion system (WECS) ,DC link capacitor ,variable speed wind turbine, Pulse width modulation (PWM), Insulated gate bipolar transistor (IGBT) Voltage and frequency control.***

I. INTRODUCTION

Now days the consumption of fossil fuel is increasing day by day. The main reason behind the use of fossil fuel is to generate more and more energy. Due to consumption of more fossil fuel all living and non living beings including the environment is badly affected continuously.

In order to overcome these causes the renewable source of electricity generation is very advantageous because there is no harmful emission and the infinite availability of prime mover that is converted into electricity.

For the installation of wind energy MNRE scheme (The Ministry of New & Renewable energy) has introduced to aware more and more people about this technology, government also gives incentives in order to promote wind energy. Wind is air in motion; this is actually derived from solar energy. About 2% of total solar flux that reaches the earth's surface is transformed into wind energy due to uneven heating of atmosphere.

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This kinetic energy of wind is used to gain the rotational motion of wind turbine which is coupled with an electrical generator to supply over a region acting as stand alone or supplying power to a grid. An actual WECS (Wind energy conversion system) be considered as follow [1] which can be used in two different ways

(A) Isolated stand alone system
(B) Grid connected system

Figure 1 shows Isolated Standalone system which is used to provide energy to small scale industries or towns located in remote areas. Whereas Grid connected system leads to increased energy efficiency, increases support and reliability of system.

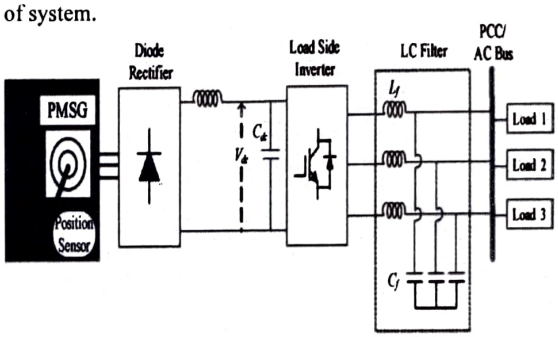

Fig. 1. Standalone wind energy system.

In wind energy application variable speed wind turbines are much better performance due to its maximum power point tracking algorithm (MPPT) .Now a days Doubly fed Induction generator are widely used in a variable speed wind turbine but te main drawback is the requirement of gear box to match turbine and rotor speed. The gearbox many times suffers and requires regular maintenance making the system unreliable [2] . The reliability of variable speed wind turbine can be improved significantly using a direct drive based permanent magnet synchronous generator (PMSG). To extract maximum power from the fluctuating wind, variable-speed operation of the wind-turbine generator is necessary. This requires a sophisticated control strategy for the generator. Optimum power/torque tracking is a popular control strategy, as it helps to achieve optimum wind-energy utilization [4-8]. Some of these control strategies use wind velocity to obtain the desired shaft speed to vary the generator speed. However, anemometer-based control strategy increases cost and reduces the reliability of the overall system. These control strategies are not suitable or too expensive for a small-scale wind turbine.

For output maximization of a PMSG based wind turbine a control strategy has been developed.

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Effect of Spacing and Diameters on the Dynamic Analysis of Laterally Loaded Piles

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Abstract: ***In this study the finite element model (FEM) analysis of group of piles in cohesionless soil with the diameter from 0.5m to 2m and spacing between the piles varied from 2D to 3D by means of the FB-multipier software. Hence by developing a finite element model soil structure interaction study is carried out considering nonlinear soil behavior in time domain analysis with the help of Newmark's beta method.***

Keywords: ***Laterally loaded piles, Dynamic analysis, p-y curves, Newmark's beta method, FB-multipier.***

I. INTRODUCTION

The soil–structure interaction (SSI) has increasingly attracted the interest of researchers and engineers in the fields of wave mechanics and soil dynamics. Piles are generally used to carry the vertical loads from the super structure but sometimes to withstand the effect of lateral load e.g. offshore structure, retaining structure etc.

There are various methods available to carry out the analysis of laterally loaded piles like finite difference, elastic continuum approach, subgrade reaction & finite element etc. Amongst all these nowadays the most realistic and accurate method is finite element method. Hence finite element method is adopted for the present work. While dealing with very high excitation like wind gusters, one must have to take into consideration the effect of non linearity. In order to consider soil non-linear behavior, the springs can have a varying stiffness given through a non-linear load-deflection relationship that depends on the type of soil and type of pile therefore nonlinear curves are used called p-y curves, where p is pressure and y is corresponding deflection.

Design engineers often prefer to use the Beam-on-Dynamic-Winkler-Foundation (BDWF) model for design purposes rather than the Finite difference method or elastic continuum solutions. BDWF methods use traditional semi empirical *p-y* curves such as those developed by Matlock (1970) and Reese et al. (1974). These curves represent the nonlinear soil behavior by a series of nonlinear springs.

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The entire analysis is carried out in FB-multipier software. The pile is idealized as a beam element, the pile cap as two dimensional plate elements using Mindlin theory and the soil as non-linear elastic springs using the p-y curves . Further the two different arrangements i.e. parallel and series arrangements of pile groups are considered. The results show that pile behavior is severely affected by various soil and pile properties and as spacing increases lateral resistance of the pile also increases.

p-y curve:

The p-y curve is developed for cohesionless soil with the help of p-y curve proposed by Reese et al. (1974). The characteristic shape of the *p-y* curve is composed of 3 straight lines and a parabolic curve (Figure (a)). In this approach, the initial modulus of subgrade reaction and ultimate soil resistance are needed to develop *p-y* curves. Reese et al. (1974) suggested suitable values for the initial modulus of subgrade reaction for different relative density of sands.

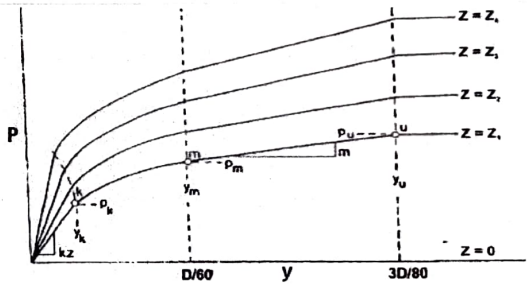

Fig (a): Characteristic shape of *p-y* curves for sand (Reese et al. 1974).

Numerical Techniques for Dynamic response:

Solution of the equation of motion for a single-degree-of-freedom system is usually not possible if the excitation applied force P(t)or ground acceleration Üg(t)--varies arbitrarily with time or if the system is nonlinear. Such problems can be tackled by numerical time-stepping methods for integration of differential equations, for this work taking into consideration reliability and accuracy Newmark's Beta method is adopted. The Newmark Beta integration method is also based on the assumption that the acceleration varies linearly between two instants of time. Two parameters α and β are used in this method, which can be changed to suit the requirements of a particular problem.

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Enhancing Breast Cancer Prognosis: Leveraging Ensemble Machine Learning Techniques

A K Nayak

Abstract*: According to WHO, breast cancer is the disease that affects people the most frequently and most dangerously in the world. Researchers are paying more attention to breast cancer because of how deadly it is and how early detection can prevent it. Since the advent of supervised machine learning algorithms, the early detection of breast cancer has advanced. The usage of several machine learning techniques as well as ensemble algorithms is demonstrated in the study. The outcomes were extremely precise, allowing for the best-possible cancer prediction. The paper's modest goal is to save people suffering from the disease by enabling them to know if the detected tumour is cancerous or non-cancerous, being Malignant. It focuses on early diagnosis of breast cancer. This paper would be useful and aiding for those who are novel researchers in prediction and diagnosis of breast cancer using machine learning.

Keywords*: Breast Cancer Prediction, Machine Learning, Ensemble XG Boost, AdaBoost.

I. INTRODUCTION

According to the statistics of World Health Organization during 2020, breast cancer has been the most prevailing disease of the world. It has mentioned that during 2020, 2.3 million of women across world has been diagnosed with breast cancer and by the end of the month, almost 7.8 million of women had been surviving in the world with the record of past five years [1]. Breast cancer has been an invasive disease since 1930 and is right now an area of attraction for researchers to infringe this invasive disease and bring awareness amongst the population with early detection and diagnosis of the disease. Breast cancer disease can be treated effectively when detected in its early stages. This early detection is an area where many researchers are working today. There are several researchers working on medicine development and its discovery for eliminating the meddlesome disease. Thus cancer biology is found to be gearing up the interest of researchers across the world. Breast cancer is not a contiguous or transferrable disease. It is a disease spreading widely due to mutations in cells. It is not a viral or bacterial infectious disease but is mutant to changes in gene material, particularly protein sequencing. Though breast cancer is mostly observed in females, some 1% of males are also victims to this disease. The disease is caused by a lump in the breast. This lump is painless but it is abnormal and hence should be treated urgently by consulting surgeons. There are basic two genes called Breast Cancer Gene 1 and Gene 2, usually referred as BRCA1 and BRCA2 which produce proteins to remove ruptured DNA. These genes help in suppressing tumors in the body. But any pathogenic disorders or any mutations in the gene sequence of any of these genes leads to breast cancer. About 13% of women in the general population will develop breast cancer sometime during their lives (N et al., 2020). By contrast, 55%–72% of women who inherit a harmful BRCA1 variant and 45%–69% of women who inherit a harmful BRCA2 variant will develop breast cancer by 70–80 years of age [2], [3]. Breast cancer is represented in two different ways. The lumps in breast cancer can be either cancerous or non-cancerous. All those lumps which are non-cancerous are usually called as Benign type which means there exists no cancer. While all those lumps which are cancerous in nature are termed as Malignant tumors. These malignant tumors need diagnosis using biopsy of the lump mass or can be diagnosed using breast imaging. The objective of the WHO Global Breast Cancer Initiative (GBCI) is to reduce global breast cancer mortality by 2.5% per year, thereby averting 2.5 million breast cancer deaths globally between 2020 and 2040. Reducing global breast cancer mortality by 2.5% per year would avert 25% of breast cancer deaths by 2030 and 40% by 2040 among women under 70 years of age. The three pillars toward achieving these objectives are: health promotion for early detection; timely diagnosis; and comprehensive breast cancer management [4]. There is an organization called National Breast Cancer Coalition (NBCC) which works dedicatedly towards the end of breast cancer through action and advocacy. According to their study carried out in 2022, breast cancer is found to be the most common disease where there are estimated to be 2,87,850 new cases of invasive breast cancer in women and 2710 new cases in men. They have even shown that there will be an additional 51,400 cases of ductal carcinoma in situ diagnosis in women. The claim made by the NBCC is depicted in the below figure which even justifies the rise in mortality rate as age increases.

Figure I.1 An Image Showing the Statistics of Breast Cancer From 1975 to 2022. [5]

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Investigating the Influence of Hardness on Abrasive Wear Modes in Three-Body Wear Conditions

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Abstract- ***In thermal power plants, fluid slurry conveying and other industrial applications where material is conveyed, the hard materials will be in-contact with parts of conveyors. The surfaces of piping and pumps surfaces come in contact with hard particles. The mill components like grinding ring, grinding balls and other components of the mill are exposed to different hard particles. In all the above the common feature is 'two bodies' which are in contact while transferring load and displacement from one object to other object. Apart from many are also exist, relative motions between the two objects. This type of loading and dynamic conditions gives rise to elastic, inelastic and surface damage of both the objects. This causes damage of machinery equipment which affects the efficiency of a machine and in extreme conditions leading to breakdown of machines. In the present investigations experiments have been conducted to understand basic wear mechanisms that will be prevailing when hardness of the material varies. For simulating the field conditions rubber wheel abrader test is used for conducting experiments. Mild steel (130.9 BHN heat resistant steel (155.6 BHN) High carbon high chromium steel (158.2 BHN) and cast iron (159.3 BHN) were used as target materials. Commercially available sand was used as abrader. Experiments were conducted with two normal loads 53.2 N and 102.4 N. The speed was maintained at 200 rpm. The time of test has 6 minutes, the flow rate was 100 grams/min. The wear loss was estimated and found that wear loss for mild steel and heat resistant steel are comparable which are 0.41 and 0.29 at a load of 53.2 N and 0.82 and 0.57 at a load of 102.4 N. The wear loss was estimated and found that wear loss for high carbon high chromium steel and cast iron of 0.08 and 0.04 at a load of 52.3 N and 0.16 and 0.06 at a load of 102.4 N which is again comparable.***

Keywords: - 130.9 BHN heat resistant steel (155.6 BHN) High carbon high chromium steel (158.2 BHN) and cast iron (159.3 BHN), 102.4 N,

I. INTRODUCTION

Wear rates are reported over a wide range varying from 10^{-15} to 10^{-11} mm^3/Nm when operating conditions and materials selection varies [1- 7].

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This implies there is no unique way of designing the machine elements. Attempt have been made to quantify parameters which are used in design by constructing the maps [8, 9]. The wear volume and wear surface roughness are of different types which have been reported by [10, 11].Wear is basically classify into following mechanisms [12];

Adhesive wear: If the contact surfaces are very smooth and enough adhesive bonding stresses exists between two pairs which could be sufficient enough to resist the relative sliding displacement then adhesive wear takes place.

Fatigue wear: whenever the cyclic load occurs between two components which are under relative motion fatigue wear occurs.

Corrosive wear: whenever the relative motion occurs between two components especially corrosive liquids and gases reaction products give rise to corrosive wear.

Abrasive wear: whenever two contact surfaces interlocks due to their surface morphology, pouching takes place which leads to abrasive wear. Different models are develop to estimate the abrasive wear volume. One of the model estimate the wear volume loss V in terms of normal load 'W', length of sliding distance 'L', and hardness value 'H', is given in equation no 1[13].

$$V = \frac{1}{3}\frac{WL}{H} \quad \ldots\ldots (1)$$

The percentage of wear loss is estimated according to equation no 2 when tests were conducted in rubber wheel abrader according to ASTM G 65 specification.

$$Percentage\ in\ volume\ loss = \frac{\text{Difference in weight}}{\text{Initial weight}} \times 100 \quad \ldots\ldots (2)$$

Kozi kato conducted the experiment in vacuum and identified three different abrasive modes which are cutting mode, wedge forming mode and ploughing mode. These modes are shown in the Fig.1 [13]. Suresh gowda etal conducted experiments using four ball tester to study the role of material on deformation and failure modes and fond that material influenced the mode of failure [14].

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Exploring the Versatility of Shape Memory Alloys: A Comprehensive Review of Applications

A K Nayak,Tusar kanta Kumbhar,Rabiteja Patra

Abstract: ***SMA has drawn massive interest and hobby in today's years in a great form of an extensive sort of commercial applications, due to their precise and superior properties, this concern improvement has been bearing with the useful resource of way of improvement and carried out research studies. SMA can heal its original shape at a certain temperature even under maximum loads applied and huge inelastic deformation. In this overview, we describe the primary functions of SMAs, their constitutive models, and their features. We also explained various properties that help to build a device/system. These devices help in cueing health issues such as heart treatment emptying urine so on. SMA has important in reducing the vibration of structures by increasing damping of the materials and this has effective in energy dissipating comparing with other materials. In the aerospace industry wing aircraft, rotorcraft, spacecraft, and micro-electromechanical systems are made up of SMA. In the automobile sector, fuel injectors and thermal valves are constructed with SMA materials. Current work focuses on various applications and properties of SMA, in the field of Medical, Civil structure, Automobile, and Aerospace industry.***

Keywords: Shape memory, pseudoelasticity, Stents, Catheter, Isolator, Hydroxyapatite, multi-functionality, Energy dissipation.

I. INTRODUCTION

In the recent modern world, biomaterials play a vital role, any matter or surface that interacts with biological systems are known as biomaterials. Every material available can't be a biomaterial. Biomaterials should be bio-compatible and bio-functional. Bio-functionality means material should perform bio-material functions like restoring feature and facilitating restoration for people after damage or disorder and to assist, enhance, or update damaged tissue or a biological feature. Whereas, biocompatibility is the property of material being compatible with living tissue i.e. it shouldn't be poisonous or produce immunological reaction while exposed to the body or bodily fluids (1). Titanium is diagnosed to be one of the maximum biocompatible substances because of the capacity to shape a strong titanium oxide layer on its floor. In a mast appropriate situation, it smiles able to supper osteointegration with the bone and it could shape a calcium phosphate-rich layer on its floor, which could be very like hydroxyapatite and also corrosion-resistant. A spare effective asset is that in case of unfavorable the protecting layer of the titanium oxides and calcium phosphate layer is regenerated. Nitinol poses bio functionality and biocompatibility which allow the flexibility to use in biomedical applications. Nitinol is a Shape memory alloy [SMA] that can memorize their previous state(2). Nitinol poses a low modulus of elasticity which is equal to natural bone material(3). Along with biomedical applications Shaper memory alloys[SMA] are mainly used in different sectors like Automobile (4–9), Aerospace(10–15) and construction filed(16–19) The SMA is characterized by two solid phases, namely Austenite and other is the martensite. Austenite is secure at high temperatures and proportions where martensite is secure at low temperatures and symmetry. Martensite exits in two configurations, one as a twinned multivariate crystallographic structure that is not associated with macroscopic deformation. The second form is identifying by detwinned configuration. This is a single variant form and is associated with macroscopic deformation.

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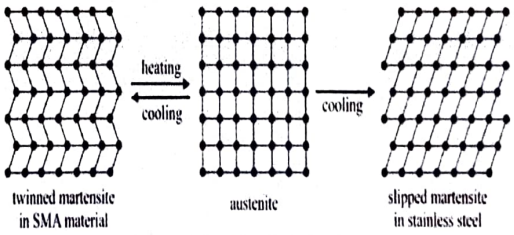

Fig 1:- Martensite transformation in shape memory alloys and steels

When there is temperature addition or increase in temperature martensite will act as twinned martensite consisting of twenty-four variants further these twenty-four variants consist of six different crystallographic structures [20]. These different crystallographic structures can be either in monoclinic conditions or orthorhombic conditions. The variation which is taking place between the austenite and martensite region is called Thermoelastic martensite transformation [TMT][21-24].

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Creating WARKS: A Novel Approach for Supply Chain Management Accessibility and Development

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Abstract: ***In our modern society, the demand of wireless communications increases exponentially. All the indoor and outdoor everything converting from wire to wireless. Even the newly invented devices, cars, TV, refrigerator, washing machine all the advanced things uses wireless technology. Because of the reason, there are more fields to do research in this area. WiFi is one of the important technology in wireless communications. In this work, we have developed a device which will useful to build an wireless network. The device used to monitor and to control supply-chain management of any organization. We have used WiFi which works as two different modes; one is AP (Access Point) and another is STA (STAtion). In this paper, AP acts as a Server where STA act as a Client. We have developed a wireless network system using self organized sensor nodes (each node has one AP, one STA and one Controller) to communicated each other serially to exchange data and request task accordingly. Because of its serial distributed formation the WiFi range is also be increased with different topology. All the command and request can be done using computer or smartphone. This system (we named it WARKS) can be implemented in home, industrial, hospital, farms, forest, agriculture and many more. To verify the system capabilities and work performance, we do the experiment in indoor and outdoor using required hardware and software.***

Keywords: ***Access Point, Arduino, NodeMCU, STAtion, WARKS, WiFi, Wireless Sensor Networks.***

I. INTRODUCTION

Wireless devices have grown tremendously within recent few years due to the appearance of global adoption, various functionality and wide applications. Future WiFi probably dedicate broadband speeds. Wireless access is consider to both indoor and outdoor environments. For high quality of service (QoS), WiFi enabled devices (i.e., smartphones, tablets, laptops, smart TVs, cameras, sensors etc.) improve user experience and attract them to this technologies. The communication technologies currently used in D2D (device-to-device) communications, to interconnect multiple sensor nodes spread into a particular area. Access to communication technology can play a pivotal role in social and economic development.

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The choice of technology to achieve this a significant aspect [1]. If the network has to cover a larger area than router is not capable of transmitting to, or if signals have to penetrate through obstacles, performance will take a hit. Interference is also a big issue, signals from other wireless networks and electronics can impact speeds. The goal of this work is to analyse WiFi feasibility and evaluate its performance and applications in different fields by using a WiFi network with sensors, kits and multimedia support. This work improve D2D communications in a significant way, appointing intermediate multi hop WiFi nodes with different network topology. The objective of this work to retain the WiFi communications without boosting the signals for both static and dynamic cases (maintaining the order and range of WiFi nodes).

For static purpose this network is usable in house, colony, factory, hospital, office, hostel, restaurant, forest etc. Also for dynamic purpose this network is usable in agriculture, animal monitoring, mountain, train, army and rivers etc. Authors intention to establish a online/offline data processing enable network for communication [2]. WiFi deals with the specification of an unlicensed bands worldwide use in wireless local area network supporting a set of scenarios based on number of devices, range, and energy constraints. WiFi offers a simple, robust, and efficient solution in the industrial, scientific, and medical radio band (ISM band) compared with other existing technologies. WiFi technology enables devices to exchange information and perform actions without human intervention. Due to their short wireless range and high obstruction losses, current WiFi require the use of intermediate nodes, to reduce complexity of the network. This paper upsurge our experiences, should create a revolution in offline WiFi network and keep the impression at peoples mind [3]. In the following sections we describe four different perspective relevant to the WiFi networks,

- Introduction
- Network Models
- Network Applications
- Conclusion and Future Plan
- Acknowledgment
- Reference

This network will be adoptable for future communication technologies to establish a convenient environment.

II. NETWORK MODELS

Authors intention to construct a network which can be use in different field and for different purpose with various functionality. Which produce a secure, reliable, energy shaven, portable and simple local area network, that favor in both cellular and ad hoc compositions.

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Improving Breast Cancer Prognosis with Ensemble Machine Learning Methods

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Abstract: ***According to WHO, breast cancer is the disease that affects people the most frequently and most dangerously in the world. Researchers are paying more attention to breast cancer because of how deadly it is and how early detection can prevent it. Since the advent of supervised machine learning algorithms, the early detection of breast cancer has advanced. The usage of several machine learning techniques as well as ensemble algorithms is demonstrated in the study. The outcomes were extremely precise, allowing for the best-possible cancer prediction. The paper's modest goal is to save people suffering from the disease by enabling them to know if the detected tumouris cancerous or non-cancerous, being Malignant. It focuses on early diagnosis of breast cancer. This paper would be useful and aiding for those who are novel researchers in prediction and diagnosis of breast cancer using machine learning.***

Keywords: ***Breast Cancer Prediction, Machine Learning, Ensemble XG Boost, AdaBoost.***

I. INTRODUCTION

According to the statistics of World Health Organization during 2020, breast cancer has been the most prevailing disease of the world. It has mentioned that during 2020, 2.3 million of women across world has been diagnosed with breast cancer and by the end of the month, almost 7.8 million of women had been surviving in the world with the record of past five years [1]. Breast cancer has been an invasive disease since 1930 and is right now an area of attraction for researchers to infringe this invasive disease and bring awareness amongst the population with early detection and diagnosis of the disease. Breast cancer disease can be treated effectively when detected in its early stages. This early detection is an area where many researchers are working today. There are several researchers working on medicine development and its discovery for eliminating the meddlesome disease. Thus cancer biology is found to be gearing up the interest of researchers across the world. Breast cancer is not a contiguous or transferrable disease. It is a disease spreading widely due to mutations in cells. It is not a viral or bacterial infectious disease but is mutant to changes in gene material, particularly protein sequencing. Though breast cancer is mostly observed in females, some 1% of males are also victims to this disease. The disease is caused by a lump in the breast. This lump is painless but it is abnormal and hence should be treated urgently by consulting surgeons. There are basic two genes called Breast Cancer Gene 1 and Gene 2, usually referred as BRCA1 and BRCA2 which produce proteins to remove ruptured DNA. These genes help in suppressing tumors in the body. But any pathogenic disorders or any mutations in the gene sequence of any of these genes, leads to breast cancer. About 13% of women in the general population will develop breast cancer sometime during their lives (N et al., 2020). By contrast, 55%–72% of women who inherit a harmful BRCA1 variant and 45%–69% of women who inherit a harmful BRCA2 variant will develop breast cancer by 70–80 years of age [2], [3]. Breast cancer is represented in two different ways. The lumps in breast cancer can be either cancerous or non-cancerous. All those lumps which are non-cancerous are usually called as Benign type which means there exists no cancer. While all those lumps which are cancerous in nature are termed as Malignant tumors. These malignant tumors need diagnosis using biopsy of the lump mass or can be diagnosed using breast imaging. The objective of the WHO Global Breast Cancer Initiative (GBCI) is to reduce global breast cancer mortality by 2.5% per year, thereby averting 2.5 million breast cancer deaths globally between 2020 and 2040. Reducing global breast cancer mortality by 2.5% per year would avert 25% of breast cancer deaths by 2030 and 40% by 2040 among women under 70 years of age. The three pillars toward achieving these objectives are: health promotion for early detection; timely diagnosis; and comprehensive breast cancer management [4]. There is an organization called National Breast Cancer Coalition (NBCC) which works dedicatedly towards the end of breast cancer through action and advocacy. According to their study carried out in 2022, breast cancer is found to be the most common disease where there are estimated to be 2,87,850 new cases of invasive breast cancer in women and 2710 new cases in men. They have even shown that there will be an additional 51,400 cases of ductal carcinoma in situ diagnosis in women. The claim made by the NBCC is depicted in the below figure which even justifies the rise in mortality rate as age increases.

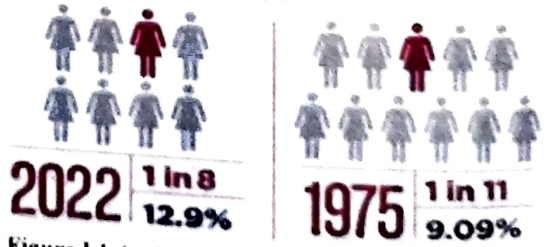

Figure 1.1 An Image Showing the Statistics of Breast Cancer From 1975 to 2022. [5]

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On the Possibility to Measure Solar UltravioletEmission using the Thermo Luminescence of Specific Crystals

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Abstract — A search for crystals capable to produce thermoluminescent glow curves after irradiation with ultraviolet (UV) light has been conducted. It has been found that ruthenium-doped crystal of $Bi_4Ge_3O_{12}$ (BGO:Ru) posseses suitable properties such as: long enough fading, good sensitivity towards UV emission, and hence could be a good candidate for direct measurement of the solar UV emission. A portable device for measuring the total and the UV solar light emission has been constructed in order to obtain quantitative values about the total and the partial UV energy absorbed by the crystals. Quantitative values for the principle thermoluminescent glow curves of BGO:Ru have been obtained for diurnal direct solar irradiation. It has been demonstrated that the intensity of the TL glow-curve peaks for exposures made at equal daytime intervals changes according Beer's law for the attenuation of UV in the Earth's atmosphere.

Keywords: *Thermoluminescence, solar ultraviolet emission, actinometer, glow curve analysis*

I. INTRODUCTION

Thermally stimulated luminescence (thermoluminescence) of exposed to radiation crystals is very interesting in view of possible practical applications. It is largely exploited at present in many applications: in dosimetry; in nuclear medicine; in environmental studies; in archaeology, etc [1-5]. Thermoluminescence (TL) emission of some crystals is caused also after irradiation with photons with "softer" than the X-rays' and gamma-rays' energy, say with the ultraviolet (UV) and even visible light [6, 7]. The latter brought us to an idea of a simple control of the diurnal ultraviolet solar emission. In this article we present some results from the search for appropriate crystals sensible to the UV light emission and to make use of their thermoluminescence in order to obtain quantitative values for the direct solar UV emission traversed Earth's atmosphere.

Revised Manuscript Received on 30 March 2015.
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II. SEARCH FOR APPROPRIATE CRYSTALS SENSIBLE TOTHE UV EMISSION

We have analyzed sets of crystals known to have a relatively high-statistics glow thermo-luminescent glow curves: crystals of Bi4Ge3O12 (referred to as BGO); crystals of Bi4Ge3O12 doped with Ru (BGO:Ru); crystals of Bi4Ge3O12 doped with V (BGO:V); crystals of Bi4Ge3O12 doped with Mo (BGO:Mo) and a crystal of Gd2SiO5 doped with Ce (GSO:Ce). ALl BGO crystals have been synthesized in the Institute of Solid State Physics, Bulgarian Academy of Sciences, with an automatic diameter-weight control system using the Czochralski technique. The GSO crystal was take from a scintillation part of a medical equipment for gamma-rays imaging (Hitachi Chemical Co.,Ltd). To obtain the physical parameters of the crystals we have used our thermoluminescence measuring setup developed for precise TL measurements on the basis of the accurately regulated linearly increase of the sample temperature up to 5000C [8]. The analysis of the glow-curves has been carried out using a computerized glow curve deconvolution method. A single peak of the TL spectrum is fitted by a general order kinetics formula described by the equation [9]:

$$I(T) = I_m b^{\frac{b}{b-1}} \exp\left[\frac{E}{kT}\cdot\frac{T-T_m}{T_m}\right]\left[(b-1)(1-\Delta)\frac{T^2}{T_m^2}\exp\left[\frac{E}{kT}\cdot\frac{T-T_m}{T_m}\right]+Z_m\right]^{\frac{b}{b-1}} \quad (1)$$

where I(T) is the glow-peak intensity, I_m is the maximum glow-curve intensity, E (in electron-volts, eV) is the activation energy, k is the Boltzmann constant, T is the temperature (expressed in Kelvin degrees, K), T_m is the value of the temperature at the peak maximum (in K),

$\Delta = 2kT/E$ and $\Delta_m = 2kT_m/E$,

$Z_m = 1 + (b-1)/\Delta_m$. In this formula the parameter b is the so-called kinetic order.

When the glow peak is a composite peak, compounded of m overlapping glow peaks, the method consists of a minimization of the χ^2-function

$$\chi^2 = \sum_{i=1}^{n}\left(I_i - \sum_{j=1}^{m} I_j(T_i)\right)^2 \quad (2)$$

where I_i are the measured glow-curve intensity values, $I_j(T_i)$ are the values of each partial glow curve at the temperature T_i, n is the number of the experimental points and m is the number of the partial glow peaks compounding the observed peak.

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Enhancing Energy Efficiency in Thermal Power Generation: Strategies and Innovations

A.K.Nayak

Abstract - ***The purpose of the study outlined in this is to identify major energy loss areas in Zimbabwe's thermal power stations and develop a plan to reduce them using energy and exergy analysis as the tools. The energy supply to demand is narrowing down day by day around the world due to the growing demand and sometimes due to ageing of machinery. Most of the power plants are designed by the energetic performance criteria based not only on the first law of thermodynamics , but the real useful energy loss cannot be justified by the fist law of thermodynamics, because it does not differentiate between the quality and quantity of energy. The present study deals with the comparison of energy and exergy analysis of thermal power plants stimulated by coal. Our national electricity requirement is about 2100MW against 1615MW supply; this is evident of about 21% deficit in terms of power requirements. In view of this situation, the project seeks to increase output from the Power Stations (PS) in the process closing down on the power shortages now and in the future through effective and efficiency improvement.***

Keywords- Energy, Exergy, Effective, Efficiency, Improvement, Thermal Power Station

I. INTRODUCTION

The SADC region including Zimbabwe they are suffering from critical shortage of power and this has negative impact on industrial development. The expansion on the demand side resulted in over stretching of the current electricity generation capacity coupled with aging thermal plants which are still utilising old technology. The paper will focus on the energy efficiency improvement in thermal stations.

Thermal Power Stations generate electricity through a thermal power plant; its installed capacity is designed with a common range of boilers feeding into common steam receivers from where any of the turbines tape the steam. Currently only few boilers are in operation with an output of approximately 1615MW. The power plants use coal as the primary input for generating electricity. The plant use 20-30% of energy value of primary fuels and the remaining 70-80% is lost during generation, transmission and distribution of which major loss is in the form of heat. The heat rate of a plant is the amount of fuel energy input needed (Btu, higher heating value basis) to produce 1 kWh of net electrical energy output. This study was done to identify various methods to reduce the heat rate of existing coal-fired power plant in Bulawayo by identifying areas that cause the most heat losses and introducing the new technologies that cater for the losses. Energy and exergy analysis is used for the identification of these loses. Energy analysis evaluates the energy generally on its quantity only, whereas exergy analysis assesses the energy on quantity as well as the quality. The aim of the exergy analysis is to identify the magnitudes and the locations of real energy losses, in order to improve the existing systems, processes or components, (Tekin and Beyramogle: 1998). This study identifies specific plant systems and equipment where efficiency improvements can be realized either through new installations or modifications, and provides estimates of the resulting net plant heat rate reductions and the order-of-magnitude costs for implementation.

Aim

The main aim of the study is to identify areas where energy losses are occurring and develop them for efficient and effective improvement in a thermal power station.

Objectives

The object to satisfy this are

- To conduct energy analysis of the overall plant and determine the efficiencies and energy losses of all the major components on the power plant.
- Select and develop the areas where energy losses are being experienced.
- Determine the costs and payback periods for the new technologies suggested for efficiency improvement.

Scope

The study scope encompasses three major tasks, energy and exergy analysis and the identification of methods to reduce the energy losses of power plant and the determination of their associated costs involved with the installation of the possible measure to cater for the problem. Energy analysis is to be done on components from the combustor to the electrical generator.

Need Justification

Electricity supply in Zimbabwe is becoming a shortage due to increase in demand made up of import displacement, urban expansion, expanded rural electrification program, new investments and the need of spinning reserves. The current electricity supply situation in the country is as shown in Table 1 below.

Exploring Ferroelectric Materials in Microstrip Patch Antenna Fabrication: A Comprehensive Survey

Pradumn Nayak, Rabiteja Patra,Kalyani Pradhan

Abstract: ***Ferroelectric materials (FEM's) are very attractive because their dielectric constant can be modulated under the effect of an externally applied electric field perpendicular to the direction ofpropagation of asignal. In thispaper, classification, properties and application of ferroelectric material for the fabrication of microstrip patch antennas is discussed.***

Index Terms: ***Ferroelectric materials and Microstrip patch antenna.***

I. INTRODUCTION

Ferro electricity is a phenomenon which was discovered in 1921.Thenamereferstocertain magnetic analogies,though it is somewhat misleading as it has no connection with iron (ferrum)at all.Ferro electricity has also been called Seignette electricity, as Seignette or Rochelle Salt (RS) was the first material found to show ferroelectric properties such as a spontaneous polarization on cooling below the Curie point, ferroelectric domains and a ferroelectric hysteresis loop. A huge leap in the research on ferroelectric materials came in the 1950's, leading to the widespread use of barium titanate ($BaTiO_3$) based ceramics in capacitor applications and piezoelectric transducer devices. Since then, many other ferroelectric ceramics including lead titanate ($PbTiO_3$), lead zirconate titanate (PZT), lead lanthanum zirconate titanate (PLZT), and relaxor ferroelectrics like lead magnesium niobate(PMN)have been developed and utilized for a variety of applications.With the development of ceramic processing and thin film technology, many new applications have emerged. The biggest use of ferro electric ceramics have been in the areas such as dielectric ceramics for capacitor applications, ferroelectric thin films for non volatile memories, piezoelectric materials for medical ultrasound imaging and actuators, and electro-optic materials for data storage and displays.

Since, Micro strip antennas are well known for their highly desirable physical characteristics such as low profile, light weight, low cost, ruggedness and they are well suited to integration with MICs. In comparison to traditional antenna elements, however, the electrical performance of the basic Microstrip antenna suffers from a number of serious drawbacks, e.g. narrow band width; high feed network losses,

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Poor cross polarization, and low power handling capacity.In many applications, the electrically shaping of the radiation pattern has received a great deal of attention. New possibilities are emerged by using new materials and structures. The uses of ferroelectric material with high dielectric constant as in antenna radiation element have received extensive research attention due to their favorable characteristics, which includes(1)high radiation efficiency; (2) low temperature coefficient, and (3) suitable scale in antenna design. Combined with the small amount of conductor losses that complements the designs, structures of this breed have allowed the achievement of high radiation efficiency. Ferroelectric material like Barium Strontium Titanate and Bismuth Titanate ,also known as a solid solution perovskite with a field dependent permittivity, is one of the more popularly investigated in recent years. Ferroelectric materials with a perovskite structure are very significant electronic materials. They are most often used in the production of capacitors as it has a high temperature coefficient of resonant frequency, large dielectric constant and high dielectric losses.

II. CHRONOLOGICALHISTORYOF FERROELECTRIC MATERIALS

Since the discovery of ferro electricity in single-crystal materials(Rochellesalt) in1921anditssubsequentextension into the realm of polycrystalline ceramics (barium titanate, $BaTiO_3$) during the early to mid-1940s, there has been a continuous succession of new materials and technology developments that have led to a significant number of industrial and commercial applications that can be directly credited to this most unusual phenomenon. Among these applications are high dielectric-constant capacitors, piezoelectric sonar and ultrasonic transducers, radio and communication filters, pyroelectric security surveillance devices, medical diagnostic transducers, stereo tweeters, buzzers, gas ignitors, positive temperature coefficient(PTC) sensors and switches, ultrasonic motors, electro-optic light valves,thin-film capacitors, ferro electricthin-filmmemories and microstrip patch antennas.

The history of the discovery of ferro electricity (electrically switchable spontaneous polarization)is a fascinating one that extends as far back as the mid-1600s when Rochelle salt (sodium potassium tartar tetetra hydrate) was first preparedby Elie Seignette in La Rochelle, France, for medicinal purposes. However, it was approximately 200 years later before this water-

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Investigating the Influence of Soft Material Hardness and Hard Material Surface Morphology on Friction and Transfer Layer Formation in Dry Conditions

A K Sahoo, Pradumna Nayak, Itishree Behera

Abstract *- The morphological features of the surface in both micro and macro levels are important factors governing the tribological behavior of the contacting surfaces. Surface hardness is also an important factor which governs the friction and wear behaviors of the contacting surfaces. Surface morphology of a tool is an important factor as it primarily controls the tribological behavior at the interface which in turn controls the surface finish of products. In the present investigation a pin-on-plate sliding tester was used to identify the effect of surface morphology and hardness on co-efficient of friction and transfer layer which characterizes the tribological behavior. The morphology of mild steel (EN8) plate surfaces were modified by employing three different surface modification methods like grinding (silicon carbide wheel polishing), shot blasting and electric discharge machining methods. Surface roughness parameters which characterize the morphology of the steel plates were measured using a three dimensional optical profilometer. Role of hardness is studied by employing lead, copper and Aluminum (Al6082) pins which were slid against steel plates. Experiments were conducted for plate inclination angles of 1, 1.5,2 and 2.5 degrees. Normal load was varied from 1 to 150N during the tests. Experiments were conducted under dry condition in ambient environment. Scanning electron microscope was used to study the formation of transfer layer on plate and pin surfaces. It was observed that the co-efficient of friction and transfer layer formation were found to depend on the surface morphology of the harder surface. The quantum of transfer layer formation on the surfaces is found to increase with increase in surface roughness.*

Keywords: *Friction, co-efficient of friction, surface morphology and transfer layer formation.*

I. INTRODUCTION

The roughness theory assumed that the frictional force is equal to the force required to climb up the asperity of slope θ and the co-efficient of friction was described as a + function of tan (θ). However, it is clear that asperities undergo deformation due to the sliding action rather than simply sliding over each other. Archard [1] studied the influence of surface roughness on friction behavior of metals and non-metals. The author [1] noticed that effect of surface roughness on friction is largest at linear loads. From the experimental observations, it was found that friction co-efficient increases with surface roughness for hard materials and decreases with surface roughness for soft materials. Nellemann et al. [2] investigated the effect of different surface topography geometries by varying asperity angles and concluded that normal pressure and bulk modulus have great influence on the real area of contact, whereas the asperity slope and friction factor are of minor importance. Whitehead [3] studied the effect of normal load on friction co-efficient for copper sliding against copper in air. The author concluded that copper shows lower friction at low loads as a result of oxide film formation that effectively separates the two metal surfaces, and exhibits high friction at high loads due to break down of the oxide film.

Bowden and Young [4] performed experiments to observe the effect of sliding speed on frictional response of copper. From their experiments, they observed very low friction co-efficient in copper at high sliding speeds. They explained that formation of a thin molten film reduces the friction co-efficient. This thin molten film acts as lubricant between sliding surfaces. Endo and Goto [5] showed that the frictional force between steel surfaces is much higher in argon atmosphere than in ambient conditions. Tsuya [6] investigated the friction of copper in vacuum and air. The author [6] found that the values of the friction co-efficient in vacuum were about 10 times higher than values measured in air. Hiratsuka et al. [7] studied the factors influencing friction and wear between metals and oxides from wear tests on different kinds of pure metals (silver, platinum, copper, magnesium, iron, titanium, aluminium). They concluded that the friction and wear depends on the oxidation activity of the metals, atmosphere oxygen and relative shear strength of the metal-oxide interface. Staph [8] studied the effect of surface texture and surface roughness on scuffing using caterpillar disc tester. Kaura [9] studied effect of surface texture on friction mechanism using a universal testing machine. The results showed that the behavior of surface and the friction during sliding depends on the degree of roughness. Menezes[10] studied the effect of directionality of surface ground marks on friction and transfer layer formation when Al-Mg alloy pins slid on steel plate of different surface roughness and author concluded that both Co-efficient of friction and transfer layer formation depend on ground angle.

Adhesive or abrasive mode of contact, primarily depends on the relative hardness and morphology of surface, is believed to be the reason for formation of transfer layer. The literature emphasis the importance of presence of a soft layer called transfer layer in characterizing both frictional forces and surface finish. The formation of transfer layer is found to be the important parameter which characterizes the behavior of interfacing surfaces.

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Enhancing Elderly Care: A Fall Detection System for Continuous Monitoring

Rabiteja Patra , Ajaya ku Sahoo,Asis Ku Barik

Abstract: ***Different fall-recognition arrangements have been already proposed to make a dependable observation framework for elderly individuals with high necessities on exactness, affectability and specificity. In this paper, an improved fall recognition framework is proposed for elderly individual observing that depends on keen sensors worn on the body and working through purchaser home systems. With treble limits, inadvertent falls can be distinguished in the home social insurance environment. By using data assembled from an accelerometer, cardio tachometer and shrewd sensors, the effects of falls can be logged and recognized from ordinary every day exercises. The proposed framework has been conveyed in a model framework as itemized in this paper***

Keywords: ARM, pulse sensor, GSM, GPS, MMA7660FC MEMS accelerometer, LPC2148 microcontroller

I. INTRODUCTION

As of late, numerous sorts of customer hardware gadgets have been created for home system applications. A customer home system generally contains different sorts of electronic gadgets, e.g. sensors and actuators, so that home clients can control them in a clever and programmed approach to enhance their personal satisfaction [1]. Some illustrative advances to actualize a home system include: IEEE 802.11, Ultra Wide Band (UWB), Bluetooth and ZigBee, and so on. ZigBee is reasonable for buyer home systems in light of the fact that different sensors can be conveyed to gather home information data in a circulated, self-sorting out way with moderately low power. Some run of the mill applications incorporate home computerization, home movement recognition (like fall identification) and home medicinal services, and so forth [2]. Kinsella and Phillips [3] found that the number of inhabitants in 65-andover matured individuals in the created nations will approach 20% of aggregate populace in the following 20 years and will clearly turn into a genuine human services issue soon.

One of most critical and capable employment of a person to deal with old individuals like fantastic moms and granddads who stay at home. There are numerous situations where they are taken consideration by a house keeper since now-a-days each one goes out to carry out an occupation. In the event that the cleaning specialists or workers are not exhibit at home then it turns into a major test to care for the elderly individuals.

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This Anticipate is expected to help such individuals to get the data if any anomalous condition has ascended to their elderly people. In this anticipate we utilize MEMS accelerometer and heartbeat sensor to screen the elderly individuals.

II. RELATED WORK

Wearable construct strategies frequently depend in light of brilliant sensors with implanted preparing. They can be appended to the human body or worn in their articles of clothing, attire or adornments. Zhang, Ren and Shi [4] proposed HONEY (Home human services sentinel framework), a three-stage location plan which comprised of an accelerometer, sound, picture and video cuts. Its development was to distinguish falls by utilizing a triaxial accelerometer, discourse acknowledgment, and on-interest video. In HONEY, once the fall occasion was identified, a ready email was promptly sent and the fall video was transferred to the system stockpiling for further examination. Bagalà et al. [5] gave an assessment of accelerometer-construct fall discovery calculations with respect to certifiable falls. They found that the affectability and specificity on genuine falls are much lower than that in an investigation situation. This rouses specialists to take all the more true situations into thought. Abbate et al. [6], [7] proposed a cell phone based fall identification framework with thought of the speeding up sign delivered by fall-like exercises of day by day lives Bai, Wu and Tsai [8] delineated a framework taking into account a 3-pivot accelerometer implanted in a PDA which had a GPS capacity for the client. In any case, because of the generally high vitality utilization of current advanced mobile phones, their framework must be dynamic for 40 hours with frontal area execution or at most 44 hours in foundation execution, which implies continuation of this framework is the most huge issue.

III. PROPOSED SYSTEM

The capacity of MEMS accelerometer is to distinguish the fall or development of the elderly individuals which is send as a twofold contribution to the miniaturized scale controller framework. The beat sensor is utilized to recognize the heart rate of the elderly people, if the heart rate is more normal heart beat(which is taken as threshold)it rises a hinder to the miniaturized scale controller. We have utilized LPC2148 as a small scale controller which contains ARM processor. If both of the situations said above has happened then the smaller scale controller instantly introduces the GPS which acquires the scope and longitude estimations of the location.

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Utilizing Color and Texture Attributes for Navigation and Obstacle Detection in Two-Wheeled Mobile Robot: Design and Vision Control Approach

Milee Panigrahi,Md Ali,Asis kumar Barik

Abstract: ***This paper addresses Visio and path following control problem of a nonholonomic Two-Wheeled Inverted Pendulum Mobile Robot. We propose control architecture based on two control layers. A speed inner loop control scheme is first designed based on state feedback technique to ensure stability of the inverted structure of the robot. A second outer loop control scheme is proposed to help the robot navigate along a desired path formed by a set of way points. It is designed inspiring the model predictive control technique. The elements of the predictive control, which are the cost function, controls and constraints, must be defined and specified: the use of different trajectories group in the control can adapt the behavior of the robot to different displacement phases. The obstacle detection architecture based on the attributes of color and texture has been developed to be implemented on an Raspberry PI and is designed as a generic high-speed image processing device. The optimization criteria are based on a maximization of performance in terms of image processing per second and a minimization of consumed resources. Our obstacles detection algorithm consists of three main steps: the color transformation, the calculation of the color and texture attributes and their classification.***

Keywords: ***Mobile robot, navigation, stability, Predictive control, Obstacles detections, Image processing***

I. INTRODUCTION

The problem of nonholonomic systems control has attracted numerous investigations in the past. A thorough studied case, with great practical significance, is the wheeled mobile robot with a kinematic model similar to a unicycle [1,2]. The differentially driven mobile robots that are very common in practical applications also have the same kinematic model. Although many researchers coped with the more difficult problem of stabilizing dynamic models for different types of mobile robots [3-6], the basic limitations of mobile robot control still come from their kinematic model. Kinematic control laws are also very important from the practical point of view, since the wheel-velocity control is often implemented locally on simple micro-controller based hardware.

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Traditionally, the problem of mobile robot control has been approached by stabilization point or by redefining the problem as a tracking control one. There are also some approaches that tackle both problems simultaneously. We believe that the tracking control approach is somewhat more appropriate, since the nonholonomic constraints and other control goals (obstacle avoidance, minimum travel time, and minimum fuel consumption) are implicitly included in the path-planning procedure [7,8].

The first path planning method consists in the robot environment decompose in cells [9] (in a set of adjacent connected regions). Then simply find an algorithm working on the quantification of the environment. There, different techniques exist, such as the Voronoi partitions [10] or the visibility graphs [11]. In these cases, the discrete environment is represented in a graph and the trajectory is generated by finding a path in the graph, this problem can be easily processed by computer [10].

Other planning algorithms work in a discrete environment. Among the best known A * [11] which is planning an optimal path knowing the environment or D * [12] which is planning a path dynamically. However, these algorithms have large defects. Including the fact that the kinematic constraints of the robots are not considered which allows the planner to find a path that will not be executed by the robot. Moreover, the fact of discretizing the search space limits the possible trajectories. The Michael Defoort algorithm [13] generates pieces of polynomial splines that meet the kinematic constraints of the robot. The algorithm can be simplified by forcing it to generate not splines, but simply polynomials. The trajectory of the robot is then assimilated with the juxtaposition of several polynomials. A fuzzy model of a predictive control was proposed by [14]. Interesting work from [15] was about the design of an optimal trajectory wich is made based on Bernstein-bézier curve and optimization. We were looking for to develop certain tools, as the paths optimization methods, and adapt them to our problem navigation. The aim was to get an under constraints optimization algorithm which can be implemented in a real-time application.

The robot is controlled on a path by considering two deviation parameters: the distance to the trajectory and the difference between the robot angle and the straight line tangent to the curve's path . These two regulators in cascade made it possible to follow a path divided in multiple straight lines to embody the desired trajectory. Obstacles, when identified, are represented by the intersection of two straight lines.

Unlocking Efficiency: Lean Techniques for Productivity Enhancement in Small-Scale Industries

A K Nayak,Tusar kanta Kumbhar,Rabiteja Patra

Abstract*— In our project, "Productivity Improvement by Lean Techniques," undertaken in Unirols Airtex (P) Ltd, Coimbatore, the core objective is to improve the production capacity of the industry. In order to meet the demand one of the lean manufacturing tools 5S (Sort, Set in order, Shine, Standardize and Sustain) has been implemented successfully to ensure that the workspace is tidy, ergonomically efficient and capable of repeatable, quality output to achieve better efficiency. In addition to this technique, we also analyzed and optimized the layout of the industry using the software VIP-PLANOPT 2006 resulting in the improvement of overall productivity which helps the industry in meeting the demand.

***Index Terms*—Lean tools, 5S, layout optimization, productivity.**

I. INTRODUCTION

Lean is basically "doing more with less" .The Japanese have been pioneers in this field and dominated the field of production with their concept of offering great quality at a cheaper cost. This was possible only through their successful implementation of lean. Toyota is known to have introduced this as a work culture itself. For example, it is the duty of the operator to ensure that the area around his machine is clean. If not, he should but clean it himself instead of expecting the sweeper to do it. The concept of lean was born after the second world war when the Toyota family wanted to convert their loom manufacturing business into an automobile business. Facing stiff competition from Ford in the foreign market and battling constraints like low capital investment, they had to come up with a new production system called Just in Time system. They brought the concept of 'pull' rather than 'push'. Thus, Toyota was successfully able to capture the international market and have now emerged as one of the leading giants in the field of automobiles.

II. IMPORTANCE OF LEAN TOOLS IN PRODUCTIVITY IMPROVEMENT

Japan had learned management and improvement techniques/methods such as industrial engineering (IE) and quality control (QC) from Europe and America. Those methods were further developed in Japan resulting in the emergence of a technique globally known as Kaizen or "continuous improvement". During this movement, Toyota developed their own unique methods in manufacturing. The concept was completely different from the mass production method. Lean manufacturing has the capacity to produce product using the least amount of non-value-adding activities that add time and subsequently, cost to the manufacturing process. The lean methodologies include certain mathematical formulas that balance work being performed to optimize the manufacturing resources necessary to achieve customer demand while helping to model the ideal physical layout of the manufacturing shop floor. The methodology provides an objective set of tools for designing manufacturing processes with minimum wait, move and queue time normally embedded in launched and routed shop-order-based systems, regardless of products manufactured or the processes used to manufacture them.

Changes in productivity within an industry or at the company level are closely related to success and survival. The profit margins realized by an industry or a specific company are directly related to its ability to make productivity gains to counter competition. Industries where competition helps propel improvement often experience greater growth. Companies that fail to keep pace with competition will fail. In either case, all stakeholders are directly impacted. Lean manufacturing is a technique that aims at significantly eliminating waste in the manufacturing process. Owing to limitations in small scale industries like finance, infrastructure all lean tools cannot be implemented. Submit your manuscript electronically for review.

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III. PROBLEM DEFINITION

The efficiency of production depends on how well the various machines, services production facilities and employee's amenities are located in a plant. To increase the productivity i.e. the production efficiency of the industry, a well-defined plant layout is mandatory. This can be achieved by the implementation of 5S in the industry and the facility layout optimization. The following problems were identified in the industry.

- The Actual demand is 111 machines per month.
- The Supply is 104 machines per month.
- Demand vs Supply gap is 7 machines per month.
- Cost of 111 machines = Rs 83,25,000
- Cost of 104 machines = Rs 78,00,000
- Loss due to insufficient supply = Rs 5,25,000

IV. OBJECTIVE

The objective of this project is to bridge the demand vs supply gap, thereby reducing the loss due to insufficient supply.

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Implementing Lean Principles for Enhanced Productivity in Small-Scale Industries

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Abstract*— *In our project, "Productivity Improvement by Lean Techniques," undertaken in Unirols Airtex (P) Ltd, Coimbatore, the core objective is to improve the production capacity of the industry. In order to meet the demand one of the lean manufacturing tools 5S (Sort, Set in order, Shine, Standardize and Sustain) has been implemented successfully to ensure that the workspace is tidy, ergonomically efficient and capable of repeatable, quality output to achieve better efficiency. In addition to this technique, we also analyzed and optimized the layout of the industry using the software VIP-PLANOPT 2006 resulting in the improvement of overall productivity which helps the industry in meeting the demand.

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Exploring Heat Pipe Performance with Varied Inclinations and Working Fluids

Rabiteja Patra,Lohit kumar Sahoo,Ajaya kumar Sahoo

Abstract: ***For various applications of heat pipes are widely used according to heat conductivity capacity of working fluid. Based on the heat pipe capacity, heat pipes used in cooling electronic industry for controlling temperature of electronic parts. Some applications need to apply heat pipes at various inclinations for cooling purpose. So need to study heat pipes at various inclinations for best results in working condition. Here we study different heat pipes at various inclinations using different working fluids for heat pipe. Among various fluids, methanol as working fluid establishes best result at high and low inclination. The configuration of evaporator section heated with hot water provided inside evaporator jacket and condenser section cooled with liquid at atmospheric passed inside condenser jacket.***

Keyword: ***heat pipe, working fluid, inclination, screen mesh, phosphorus bronze.***

I. INTRODUCTION

Amir Faghri [1] identified the types of the heat pipe with the application for better understanding the operation and principal of heat pipes. The explanation of the vapor and liquid distributions provide better understanding of the transport phenomenon. Heat pipe analysis and simulation done with the various types of the heat pipe with thermal-fluid phenomenon occurring within a heat pipe. The explanation was done on the numerical analysis and experimentation on the various types of heat pipe with the steady state, transient and frozen start up. M. N. Khan, Sandeep Pathak, etl [2] discussed the working and limitation of heat pipe. The capillary limitation has required overcoming the all pressure losses inside the heat pipe. Viscous limitation deals with the total vapor pressure developed in vapor flow inside the heat pipe. The sonic limitation occurred during start up or at low temperature operation with the increased vapor velocity, inertial or dynamic, pressure effects which results in the temperature gradient along the heat pipe.

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The entrainment limitation can be expressed in the Weber number as this limit due to counter flow of the vapor and liquid flow in the heat pipe. The boiling limitation based on the circumferential heat flux with formation of the bubble and collapse of the bubbles. Wick structure of the reducing the radius will cause for a very large amount of pressure loss and the thicker wick reducing n the wick superheat. Effect of the fluid charge shows the optimum performance of the heat pipe was achieved with the 50 – 75 % of filling ratio at 50° inclination angle.

Effect of working fluid is depends on the properties of the working fluid compatible with case and wick material. Nano-fluids give better result than the conventional with improve in the thermal characteristics of the heat pipe. Effect of tilt angle on the performance of heat pipe affects with changing thermal characteristics with gravity changes. When the evaporator is below the condenser, performance of heat pipe increase with increasing tilt angle as it increases the rate of liquid flow from condenser to evaporator. A. K. Mozumder1, A. F. Akon1, M. S. H. Chowdhury1 and S. C. Banik, [3] demonstrate the operation of heat pipe with plotting the graph of axial temperature distributions, thermal resistances and overall heat transfer coefficient for the different heat input, different filling ratio, different working fluids. The axial temperature distributions for different fluids show that the slopes are lower than water and methanol at different heat inputs. Also the thermal resistance for different fluid ratio at different heat inputs with acetone working fluid show minimum value. The overall heat transfer coefficient at different heat inputs with acetone working fluid show maximum value. When acetone used as working fluid, the results show minimum values of temperature difference across evaporator and condenser with different filling ratios.

Xue Zhihu, Qu Wei [4] demonstrated the analysis of start up and effects of inclination angle on performance of pulsating heat pipe. For startup analysis the results of the different working fluids are plotted with saturation pressure against temperature for ammonia, acetone, water, R134 and HFO-123yf. Among different working fluids, the ammonia gives good performance and less time for start up. Also in the horizontal condition and nucleation boiling gives better performance of ammonia than other fluids. In analysis of effect of inclination angle, the ammonia with half filling ratio at different angles and at different heat inputs, the occurrence of oscillation, frequency of change the bulk circulation and liquid slugs phenomenon observed with ammonia as working fluid. The increases the chances of burnout at low filling ratio and increases the thermal resistance.

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Developing a Prototype Sarcastic Gadget for Addressing Perceptual Disabilities: A Design Approach

A K Sahoo,P K Nayak,A K Nayak,B R Nayak

Abstract: ***Although embedded computing technology is widely used today in many safety-critical applications, yet there is a need for future scope and development. So researchers have only begun to explore its potential. As more common items corresponding to embedded systems such as washing machines and ATM machine etc incorporate embedded processing capability, the number of such systems could grow exponentially. However, unlike purely digital technologies, embedded systems are limited by more than our imagination.***

In 2006, Carnegie Mellon University's Priya Narasimhan launched a group effort to develop Trinetra (www.ece.cmu.edu/~trinetra), a systemthat lets blind persons self-identify items in a grocery store using a "third eye"—a smart phone and inexpensive off-the-shelf embedded devices. In this scenario, they're also limited by the physical components used to perform its parameter up to the mark—considering theiraccuracy, size, weight, processing speed, and power requirements etc. Nevertheless, current trends favour the widespread deployment of embedded devices in the future. Human's basic requirement is cultivated eventually. For example Cell phones which permeate society, in processing and communication platform fast approaching ubiquity. And many different market sectors, which start from game developers to the military application, with adequate motivation, create and refine new cognitive aspects, ensuring the availability of adequate R&D resources. One of the many areas in which embedded systems show great promise is gadget technologies, which address the special needs of those with impairments. Hence its necessary to built a grocery an embedded device. Prototypic sarcastic gadget which is a glove or hand shape material that can recognize basic hand gestures and convert them into speech using low-cost.

Keywords: ATM, R&D.

I. INTRODUCTION

Aim: The main aim of the research is to implementing a gadget system for the physically disabled people.

Purpose: The Deaf people have difficulty in communicating with others like who don't understand sign language. In this purpose we are implementing this research. There has been a great development in the past few years on the infusion of technology in the life and curriculum of people with special needs. A techno logy that enables an individual with a learning disability to compensate for specific deficits is indeed an assistive technology. Technology to incorporate would usually range between the simple low-level technologies to the robust emerging technologies. As technology is meant to help humanity, assistive technology relates well to those with special needs. Research on assistive technology will need to target a variety of people's categories. It will target the subjects with special needs, their parents and families, professionals, policy makers, corporate executives, and the government sector. Successful research will require the cooperation of parental groups, academic institutions, international organizations, non-government organizations, universities, and private centers. The aim of using technology in special needs is to contribute to the possibilities of adoption of assistive technologies in specialized centers or to the preparation for inclusive education.

Many researchers will agree that selecting the most appropriate technology for individuals with learning disabilities, requires a careful and systematic plan. It is important to stress that not all assistive technologies are appropriate for all individuals in all situations. People with learning disabilities have their own unique set of strengths, weaknesses, special abilities, interests, and experience. It will become obvious that there is no such "general purpose" assistive technology. Disability requires careful analysis of the interplay between the individual; the specific task/functions to be performed; the specific technology; and the specific contexts of interaction.

A real risk now persists from the flow of the general-purpose assistive technology toys and tools, making it harder for professional to recommend the actual tools due to the very competitive price of the general purpose ones. Each child with special needs is a unique entity with very detailed descriptors that distinguishes him from the others. Only professionals are able to determine those differences and therefore satisfy the need for proper assistance. Robust technologies require the designer to be involved with the world he/she is designing for. The gap between humanities and science needs to be bridged to get the scientists to innovations with human use and nature.

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II. SYSTEM DESIGN

In general, deaf people have difficulty in communicating with others who don't understand sign language. Even those who do speak aloud typically have a "deaf voice" of which they are self-conscious and that can make them reticent. The Hand Talk glove is a normal, cloth driving glove fitted with flex sensors along the length of each finger and the thumb. The sensors output a stream of data that varies with degree of bend. The output from the sensor is analog values it is converted to digital and processed by using microcontroller and then it will be transmitted through wireless communication (RF), then it will be received in the Receiver section and processed using responds in the voice using speaker.

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Utilizing Graph Theory Concepts in Developing Disaster Recovery Management Strategies

P K Chand,Kalyani Pradhan,A K Sahoo

Abstract: ***The COVID-19 pandemic has asserted major baseline facts from disaster anthropology during the last three decades. Resilience could be based on the solution to the question: "What is the maximum amount of destruction, if any, that the graph (a network) can sustain while ensuring that at least one of each technology type remains and that the remaining induced subgraph is properly colored?" The concept of a graph's Chromatic Core Subgraph is a solution to the stated problem. In this paper, the pandemic graphs and certain sequential graphs are developed. For these graphs, the Chromatic core subgraph is obtained. The results of the pandemic graphs' Chromatic core subgraph are used to develop a disaster recovery strategy for the COVID-19 pandemic.***

Keywords: COVID-19, Directed graphs, Disaster Recovery Plan, Jaco-type graph, Pandemic.

I. INTRODUCTION

For general definitions on graphs and digraphs [1]-[4]. The number of edges that touch the vertex, v of the graph G is known as the degree of that vertex, denoted deg(v) . A functional graph is a digraph that may be built by a function mapping $\{1,2,3,...,n\}$ onto itself. Every vertex in such graphs has an outdegree of one. The definition of a linear Jaco graph [5] (all Jaco graphs for that matter) incorporates an integer valued linear function. The function value of the vertex subscript $f(i)$ of vertex v_i determines the total vertex degree deg(v_i) . Observe that the most theoretical underpinnings of any graph G is its chromatic number. The Chromatic number [4] of a graph G, given by $\chi(G)$, is the minimum number of colors required to color the vertices such that no monochromatic edges exist. This style of coloration is referred to as proper coloring. Coloring planar graphs which can be formed from a map was one of the early applications of the graph coloring subject. It further resulted in the famous Four Colors theorem, which stipulates that planar graph can be colored properly with four shades. The field of graph coloring problems and its applicability has now become span less.The idea of Chromatic Core Subgraph [6], abbreviated as CCS, is obtained in this study for two non-negative, non-decreasing integer sequences known as Jaco-type graphs.

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As an application to this concept, the pandemic graphs are created using statistical analysis of data collected on COVID-19 patients in India. The recovery technique [7, 8] is designed based on the chromatic core subgraph of pandemic graphs.

II. CHROMATIC CORE SUBGRAPH OF JACO-TYPE GRAPHS

The earliest research on this topic focused on Clique Invariants of Jaco-type graphs as in [9]. These graphs are graphical representations of integer sequences. These types of graphs were first introduced in [10]. The Chromatic Core Subgraph of Jaco-type graphs for Sequences and Fibonacci-Sequence are obtained in this section.

Definition 2.1. [6] For a finite, undirected simple graph G of order $v(G) = n \geq 1$, a chromatic core subgraph H is a smallest induced subgraph H (smallest in respect of $si(H)$.) such that, $\chi(G) = \chi(H)$.

Definition 2.2. A finite, undirected simple graph's vertex is called as the graph's core vertex v_{ccs}, if it satisfies the following conditions:

- $\deg(v_{ccs}) = \Delta(G)$
- v_{ccs} forms edge with the end vertex of the graph G.

A. Results on Jaco-type Graphs for Sequences

The infinite Jaco-type graph [9] for Sequences $J_\infty(s_1)$ is defined as a graph with vertex set $V(J_\infty(s_1)) = \{v_i : i \in \mathbb{N}\}$ and arc set $A(J_\infty(s_1)) = \{(v_i, v_j) : i, j \in \mathbb{N}, i < j\}$ such that $(v_i, v_j) \in A(J_\infty(s_1))$ if and only if $2i \geq j$. It's worth noting that in this family, a finite Jaco-type graph $J_n(s_1)$ is generated from $J_\infty(s_1)$ by discarding all vertices v_k, $\forall\ k > n$ (with incident arcs).

Fig. 1 depicts a Jaco-type graph $J_8(s_1)$

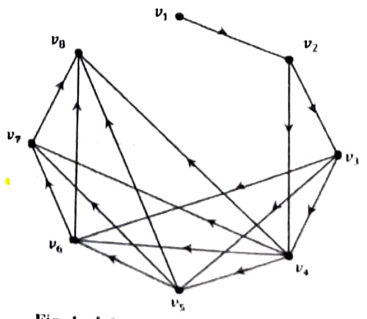

Fig. 1. $J_8(s_1)$

A Novel Fuzzy Logic-Based Sensorless Speed Control Method for Position Sensorless BLDC Servo Drives

Dr.A.KSahoo, Itishree Behera, Pradumna Nayak

Abstract*: The development of advanced motor drive has been increases rapidly, because of their higher performance and reliability. The Sensorless control of permanent magnet brushless DC motor is presented in this paper. The fuzzy PI controller is developed for controlling the speed of the PMBLDC motor drive. Here the Sensorless control is obtained based on indirect back EMF detection which was justified by the observation that the position sensing is obtained indirectly from zero crossings of terminal voltages. Closed loop speed control is made with estimated speed from the stator voltage, so the drive proposed without any shaft mounted devices like position sensor and speed sensors. The performances of the proposed fuzzy logic controller based PMBLDC motor drive were investigated and the results are compared with conventional PI controller. Also the sensorless result scheme is compared with sensor control. In this Sensorless technique the cost of mechanical components such as sensors and cables are eliminated. The simulated results of conventional and fuzzy controller is compared and results illustrates that the FLC gives better dynamic performance also it is more robust for industrial speed control drive applications.

Index Terms*: Brushless DC motor, fuzzy logic controller, PI controller, MATLAB, Sensor and Sensorless control, Zero cross detection.

I. INTRODUCTION

In recent years BLDC motors are used in high performance drive system because of its advantages. The brushless DC motor has trapezoidal electromotive force (EMF) and quasi rectangular current waveforms. These motors are widely used in industrial applications, robot manipulators and home appliances where speed and position control of motor are required. To sense the rotor position it requires the position sensor such as resolver or encoder or hall sensors. Brushless DC Motors are driven by DC voltage but current commutation is controlled by solid state switches. The commutation instants are determined by the rotor position. The zero crossing of back EMF can be detected to determine the commutation sequence without hall sensors. These methods are based on, using back EMF of the motor detection of the conducting state of freewheeling diode in the unexcited phase, back EMF integration method detection of stator third harmonic voltage components[1]. Back EMF estimation methods typically rely on the zero crossing detection of the EMF waveform. The back EMF estimation is done by sensing the terminal voltages with respect to a virtual neutral point. Detecting the free-wheeling diode conduction in the open phase gives the zero-crossing point of the back EMF waveform. This approach of rotor-position sensing is work in lower speed. The main drawback of this scheme is the requirement of six additional power supplies for the comparator circuits to detect current flowing through the free-wheeling diode [2]. An extended Kalman filter estimator for a brushless dc motor has been developed by Bozotertic and Martin jadric for speed and rotor position estimation but in this method uncertainty in modeling and measurements [3]. Integrating the back EMF waveform of the unexcited phase is another method to extract the position information. This type of approach is less sensitive to switching noise but low speed operation is poor [4]-[6].

This paper presents the indirect back EMF detection which is directly obtained from sensing the terminal voltages by properly choosing the pulse width modulation. This method does not involve any integration since the line voltages are used the requirement of neutral potential has been eliminated [7]-[8]. It also eliminates the common mode noise. The approaches to zero crossing detection were used to start reliably the BLDC motor drive in Sensorless operation.

The Sensorless control based drive by conventional and fuzzy PI controller is presented in this paper. The conventional speed control methods have the following difficulties, it depends on the accuracy of the mathematical model of the system and the expected performance is not met due to the load disturbances [9]-[10]. The fuzzy controller gives the better dynamic performance as well as error reduction. The fuzzy logic technique is used to control the speed of BLDC motor under variable as well as fixed conditions. Recently this technique has been applied to fast response linear servo drive giving superior results [11]-[14].

This paper is organized as follows. The first section gives the introduction about the paper. The second section of the paper is about the proposed Sensorless control of BLDC drive. Design of speed controller with conventional and fuzzy technique is discussed in the third section. The fourth section deals with the simulation work carried through MATLAB environment. The fifth section is about the results and discussions. The final section presents the conclusion and future work of the paper.

II. SENSORLESS SCHEME FOR BLDC MOTOR DRIVE

Manufacturing cost of a BLDC motor drive can be reduced more by elimination of position sensors and speed sensors. Sensorless control is the only choice for some applications where hall sensors cannot function reliably because of harsh environments. Consider a BLDC motor having three stator phase windings connected in star Fig.1. The BLDC motor is driven by a three-phase inverter in which the devices are triggered with respect to the rotor position.

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Optimizing Cooling Performance in Atrium Buildings: Assessment of Energy Conservation Measures and Key Parameters

Rabiteja Patra,Lohit kumar Sahoo,Ajaya kumar Sahoo

Abstract: ***Atrium nowadays is applied extensively by professional designers and owners to bring various benefits such as adequate daylight, circulation spaces and surfaces for landscape applications. One of the most significant problems regarding this popular architectural feature is the space conditioning of atriums which has relatively large volume compared with traditional commercial and institutional spaces. This may lead to high energy consumption, if atriums are fully conditioned unless effective design strategies are implemented. It is often very difficult to achieve high thermal comfort and low energy consumption at same time. The potential for energy conservation through severe control of indoor temperatures strengthen the examination of the applicability of the universal values of comfort temperatures recommended by international comfort standards. The aim of this paper to assess energy conservation measures, which supports to conditions of the thermal environment and has contributed to achieve architectural design features. Systematic investigation of factors for energy conservation via literature review helped to reveal about the design features which have influenced in developing comfortable environment; daylighting, acoustics, natural ventilation and thermal control have been identified as environmental factor in rolling out the architectural features in atriums. The result would help to optimize at initial design stage the controlled environment and would provide valuable feedback to help architects and designers to identify the most energy efficient atrium building type.***

Index Terms: Atrium, Energy Conservation, Daylight, Thermal Environment.

I. INTRODUCTION

An atrium is a great glassed volume located between indoor and outdoor indicates that the environmental conditions like solar radiation, ventilation and heat energy seem intensified, turning them into spaces with a great environmental potential. Atrium has already become a kind of widespread building form in the architecture. Now, the architectural technology has developed constantly, and people bring natural environment into countries and buildings through atriums. The atrium reinforces the relation of the people and nature.

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It improves environment's quality and people standards.[1] People modify both their behavior and environments to conform to societal expectations of thermal comfort. With the technologies of the modern world, dependence on mechanical systems in the built environment became the norm. Air conditioning technologies have transformed what is regarded as a 'normal' building

In many different parts of the world that these play a critical role in providing expected comfortable thermal environments in modern buildings. Expectations of a comfortable environment are converging worldwide: hot environments are being cold while cold indoor environments are being heated.[2]

In the atriums of public buildings, the physical environment is determined by architectural features in various ways, therefore, an integrated consideration of the overall physical environment is important.[3] The most fundamental concept of successful atrium design is a good understanding of the complexity of the atrium environment. Atriums are the most complex built environments that most designers will encounter. Atriums are composed of more component parts in more complicated relationships than any other building type. No fundamental component of an atrium should be accepted until its relationship with the whole is understood. For every component and every aspect of every component there will be beneficial aspects and also non-beneficial aspects. There will be "pros" and "cons" associated with every element.[4] The complexity of atrium design does not lend itself to prescriptive standards, but sound life safety principles must be incorporated into every atrium design. Good atrium design will maximize the natural environment to promote energy conservation.

Comfort has become synonymous with the consumption of applied energy. The international comfort standard, ANSI/ASHRAE Standard 55 is used extensively as a reference for comfort levels. American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) Standard 55 defines thermal comfort as "that state of mind which expresses satisfaction with the thermal environment." It involves the well-being of the occupants in a particular environment for a particular climate about their capacity to adapt to thermal equilibrium, physiological, psychological and behavioral changes.[5] Thermal comfort is often related to the condition of an individual's mind which expresses satisfaction or dissatisfaction with the thermal environment.

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Exploring the Complex Influence of Temperature and Tensile Stress on High-Temperature Orientation Modification of Undrawn Polyester Filaments

Rabiteja Patra , Ajaya ku Sahoo,Asis Ku Barik

Abstract* — *In the present work the complex influence of the temperature and tensile stress on the deformation behavior, birefringence and degree of crystallinity of undrawn poly (ethylene terephthalate) (PET) fibers was studied. Amorphous PET yarns were subjected on heat mechanical modification at constant temperatures in a narrow range above glass transition temperature from 80 ^{0}C to 95 ^{0}C combined with tensile stress with values from 0 MPa to 30 MPa. Birefringence measurements and differential scanning calorimetry (DSC) were used in order to identify the occurred as a result of the heat mechanical processing structural changes in the samples. The fibers birefringence was measured using a specialized device that allows quick and precisely determination of the birefringence of complex objects such as polymer fibers and films. It is established the influence of the superposition annealing temperature/tensile stress on the filaments dimensional changes, birefringence and degree of crystallinity.

Keywords* — *birefringence, deformation behavior, degree of crystallinity, filaments, tensile stress.

I. INTRODUCTION

The flexible chain polymers (FCP) are mainly used for the production of fibre-forming polymeric materials, films, etc. In the case of undrawn filaments, the final structure is mainly due to the melt spinning conditions and of the subsequent thermo mechanical treatments, too. Depending on the forming conditions in the fibers are formed areas with an increased order of the macromolecular segments, meso-phase and crystalline phases with a different perfection which under appropriate conditions can be converted into crystal nucleus, and they are the so-called semi-crystalline nuclei. Another consequence of the filaments formation is the formation of regions with frozen stresses in them.

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The uniaxially filaments download is accompanied by the alternative processes of the macromolecular segments orientation as well as from the destruction, tangling, untangling, stress relaxation, deformation, etc. The above-mentioned processes have a direct influence on the physical and in particular on the mechanical properties of the treated fibers.

At the same time the optimal realization of the high temperature orientation modification of polymer filaments remains complex and still insufficiently studied process. Therefore the study of the structural reorganization mechanisms during uniaxially drawing needs of special attention. The birefringence determination is a convenient and effective method for investigating of the orientation effects in the FCP. Representative of the FCP is the crystallizable thermoplastic poly (ethylene terephthalate) that in the form of fibres and foils has a widespread use. The applications of PET are based on its relatively high glass transition temperature and a low crystallization rate. There are described investigations of the relationships between treatments of PET with different initial structures and the caused phase and structure evolution [1-3]. The effects of the strain force, strain rate and temperature on the structure development of PET filaments have been well studied and reported by a number of researchers [4-6] including the authors of the present article. It is studied the influence of the treatment and production conditions on the fibers deformation behavior [4, 5] mechanical properties [6, 7] and spinning process [8]. Most often the birefringence measurement is used as a measure of degree of the fibers [7, 9-12] and films [14] orientation. Despite the large number of carried out investigations PET remains an interesting research object, intensively studied in the recent years. The complex effects of the combined tension stress with thermal treatments in the temperature region slightly above the glass transition temperature from 80^{0}C to 95^{0}C on the deformation behaviour and super molecular structure development in uniaxially oriented PET remains not fully clarified. The aim of this study is the structural reorganization behavior of amorphous as-spun PET fibers caused by combined thermal and mechanical treatments at four different temperatures ranging from 80^0*C* to 95^0*C* and mechanical tensile loading with values from 0 to 30 *MPa.*

Comparative Analysis of Tree Structure Algorithms for Web Data Extraction

Sudhansu Lenka, Rabiteja Patra, B R Nayak

***Abstract*— Nowadays, Web pages provide a large amount of structured data, which is required by many advanced applications. This data can be searched through their Web query interfaces. The retrieved information is also called 'deep or hidden data'. The deep data is enwrapped in Web pages in the form of data records. These special Web pages are generated dynamically and presented to users in the form of HTML documents along with other content. These webpages can be a virtual gold mine of information for business, if mined effectively. Web Data Extraction systems or web wrappers are software applications for the purpose of extracting information from Web sources like Web pages. A Web Data Extraction system usually interacts with a Web source and extracts data stored in it. The extracted data is converted into the most convenient structured format and stored for further usage.**

This paper deals with the development of such a wrapper, which takes search engine result pages as input and converts them into structured format. Secondly, this paper proposes a new algorithm called Improved Tree Matching algorithm, which in turn, is based on the efficient Simple Tree Matching (STM) algorithm. Towards the end of this work, there is given a comparison with existing works. Experimental results show that this approach can extract web data with lower complexity compared to other existing approaches.

***Index Terms*—About Web Data Extraction, Document Object Model (DOM), Improved Tree Matching algorithm.**

I. INTRODUCTION

Web Data Extraction systems [1] are software applications for the purpose of extracting information from Web sources like Web pages. A Web Data Extraction system usually interacts with a Web source and extracts data stored in it and converts the extracted data in the most convenient structured format and stores it for further usage. World Wide Web (WWW), as the largest database, often contains various data that we would like to consume for our needs. This data can be searched through Web query interfaces. The retrieved information (query results) is also called as deep data or hidden data. This information is, in most cases, mixed together with formatting code and other information like website title, advertisement and navigation links, headers, footers, scripts and comments - which makes the page more human-friendly, but not machine-friendly. This deep data is enwrapped in webpages in the form of data records. These special Web pages, which contains these data records are generated dynamically and presented to users in the form of HTML documents along with other content. These webpages can be a virtual gold mine of information for business, if mined effectively. Web Wrapper [2] is a program that extracts content of HTML pages, and translates it into a relational form. In literature, there can be many approaches used for web data extraction. Currently, data extraction methods [3] can be generally divided into following five categories.

- Based on natural language processing – in this method of data extraction, first the structures of clauses and phrases, and the relationship of clauses are analyzed, and then rules for extraction based on the syntax and semantics are generated. Hence, this method is applicable to the source documents which contain a lot of text, especially grammatical text. But the texts in Web pages are usually imperfectly structured sentences, which narrows its applicability. The classical systems that are based on this principle are RAPIER [4], WHISK [5] and so on.
- Based on wrapper summing up the rules – this method of information extraction makes use of machine learning techniques to learn structural features from a number of Web pages, and then sums up the extraction rules using the structural features. Usually, one wrapper can only handle a specific source. To extract information from different sources, a series of wrapper libraries are needed, which requires a huge workload. Tools using this method are mainly WIEN [6] and SoftMealy [7].
- Based on Ontology - The main idea in this method of data extraction is to construct a complete knowledge base for a specific domain. The information is extracted by using the relevant rules in the Knowledge Base to process the Web pages. This method depends less on the structure of the Web page, and requires powerful domain-specific Ontology, which also requires heavy workload. In [8], Shanmugasundaram et al. studied about this method for information extraction.
- Based on HTML structure - this method extracts information based on structural features of HTML documents. Such systems include XWRAP [9], RoadRunner [10] and W4F [11].
- Based on visual features - Visual based wrappers such as ViDE [12], VSDR, and ViPER use visual cue to locate and extract correct data region. These wrappers calculate the boundary and location of a data region, and take data region which is large and centrally located as the correct data region.

In recent years, some value-added services like comparative shopping and domain search have motivated the research of data extracting technology. This paper deals with a Wrapper development, which takes search engine result pages as input, pre-processes these pages, identifies the correct data region, constructs DOM tree, generates template, checks the similarity between template and other webpages using Tree Matching algorithms [3],[14] and converts the data into structured format and stores it. XPath [13] is a language that is used to address parts of an XML documents. It is also used to find and locate the information that the users are interested in structured documents.

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Assessing Risk and Implementing Security Measures against WannaCry Ransomware

Sudhansu Lenka,Rabiteja Patra,B R Nayak

Abstract: ***Incidents of wannacry has been escalated over 150 countries, including the United States, United Kingdom, Spain, Russia, Taiwan, France, and Japan. The software can run in as many as 27 different languages, it is important to understand to what extent cyber attacks can be predicted . There are many related and ongoing research available on cyber security threat, but wannacry ransomware attack has become one of the main security concern now a days. This paper shall evaluate the securitymeasures to secure victim's pc from wannacry ransomware attack and analyze the risk from this threat.***

Keywords: Ransom Ware, Wannacry.

I. INTRODUCTION

Emergence of wannacry malware has significantly changed the cyber threat landscape. This type of ransomware encrypt the valuable data on victim's computer and request a payment to decrypt the data. Victims, with no way to defend themselves, are often advised to simply pay. The payment is in the form of bitcoins i.e. implemented to avoid the traceability of the intruder after or during payment.

Wanna Cry infect the victim's computer if the user -

1. Opens an infected email attachment.
2. Clicks on an infected link.
3. Installs an infected app.
4. Visits a legitimate website that has been infected.

In this paper we evaluate the security measures to overcome security threat & shall provide a system for public to securely use their systems. This paper will not only explain to secure pc from ransomware but also analyze the risk from this security threat.

This paper is divided into 3 sections -

1. Introduction
2. Word cloud approach contained in tweets
3. Incorporating security measures to remove Threat .
4. Conclusion

II. WORD CLOUD APPROACH CONTAINED IN TWEETS

Word cloud is best to visualize most of the terms and words contained in tweets. To use this one should have an active twitter account.

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Below the word cloud is created by using R Programming language in R Studio. In this code user authenticate from twitter using consumer key, consumer secret, access token and access secret. Then after tweet searching can be done. This code also eliminates numbers, stop words, punctuations,
white spaces and convert the rest into lower case.

```
setup_twitter_oauth(consumer_key,consumer_secret,access
_token,access_secret)
eesha_tweets <- searchTwitter("wannacry", n=200, lang =
"en")
eesha_tweets
eesha_tweets_text <- sapply(eesha_tweets, function(x)
x$getText() )
docs <- Corpus(VectorSource(eesha_tweets_text))
toSpace <- content_transformer(function (x , pattern )
gsub(pattern, " ", x))
docs <- tm_map(docs, toSpace, "/")
docs <- tm_map(docs, toSpace, "@")
docs <- tm_map(docs, toSpace, "\\|")
docs <- tm_map(docs, content_transformer(tolower))
docs <- tm_map(docs, removeNumbers)
docs <- tm_map(docs, removeWords, stopwords("english"))
docs <- tm_map(docs, removeWords,c("tco","https"))
docs <- tm_map(docs, removePunctuation)
docs <- tm_map(docs, stripWhitespace)
docs <- tm_map(docs, stemDocument)
dtm <- TermDocumentMatrix(docs)
m <- as.matrix(dtm)
v <- sort(rowSums(m),decreasing=TRUE)
d <- data.frame(word = names(v),freq=v)
head(d, 10)
wordcloud(words = d$word, freq = d$freq, min.freq =
1,max.words=200, random.order=FALSE,
rot.per=0.35,colors=brewer.pal(8, "Dark2"))
```

Output

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Exploring the Feasibility of Measuring Solar Ultraviolet Emission via Thermo Luminescence of Select Crystals

B R Nayak,P Chand,P K Nayak,A K Sahoo

Abstract *— A search for crystals capable to produce thermoluminescent glow curves after irradiation with ultraviolet (UV) light has been conducted. It has been found that ruthenium-doped crystal of $Bi_4Ge_3O_{12}$ (BGO:Ru) posseses suitable properties such as: long enough fading, good sensitivity towards UV emission, and hence could be a good candidate for direct measurement of the solar UV emission. A portable device for measuring the total and the UV solar light emission has been constructed in order to obtain quantitative values about the total and the partial UV energy absorbed by the crystals. Quantitative values for the principle thermoluminescent glow curves of BGO:Ru have been obtained for diurnal direct solar irradiation. It has been demonstrated that the intensity of the TL glow-curve peaks for exposures made at equal daytime intervals changes according Beer's law for the attenuation of UV in the Earth's atmosphere.*

Keywords: *Thermoluminescence, solar ultraviolet emission, actinometer, glow curve analysis*

I. INTRODUCTION

Thermally stimulated luminescence (thermoluminescence) of exposed to radiation crystals is very interesting in view of possible practical applications. It is largely exploited at present in many applications: in dosimetry; in nuclear medicine; in environmental studies; in archaeology, etc [1-5]. Thermoluminescence (TL) emission of some crystals is caused also after irradiation with photons with "softer" than the X-rays' and gamma-rays' energy, say with the ultraviolet (UV) and even visible light [6, 7]. The latter brought us to an idea of a simple control of the diurnal ultraviolet solar emission. In this article we present some results from the search for appropriate crystals sensible to the UV light emission and to make use of their thermoluminescence in order to obtain quantitative values for the direct solar UV emission traversed Earth's atmosphere.

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II. SEARCH FOR APPROPRIATE CRYSTALS SENSIBLE TOTHE UV EMISSION

We have analyzed sets of crystals known to have a relatively high-statistics glow thermo-luminescent glow curves: crystals of Bi4Ge3O12 (referred to as BGO); crystals of Bi4Ge3O12 doped with Ru (BGO:Ru); crystals of Bi4Ge3O12 doped with V (BGO:V); crystals of Bi4Ge3O12 doped with Mo (BGO:Mo) and a crystal of Gd2SiO5 doped with Ce (GSO:Ce). ALl BGO crystals have been synthesized in the Institute of Solid State Physics, Bulgarian Academy of Sciences, with an automatic diameter-weight control system using the Czochralski technique. The GSO crystal was take from a scintillation part of a medical equipment for gamma-rays imaging (Hitachi Chemical Co.,Ltd). To obtain the physical parameters of the crystals we have used our thermoluminescence measuring setup developed for precise TL measurements on the basis of the accurately regulated linearly increase of the sample temperature up to 5000C [8]. The analysis of the glow-curves has been carried out using a computerized glow curve deconvolution method. A single peak of the TL spectrum is fitted by a general order kinetics formula described by the equation [9]:

$$I(T) = I_m b^{\frac{b}{b-1}} \exp\left[\frac{E}{kT}\cdot\frac{T-T_m}{T_m}\right]\left[(b-1)(1-\Delta)\frac{T^2}{T_m^2}\exp\left[\frac{E}{kT}\cdot\frac{T-T_m}{T_m}\right]+Z_m\right]^{-\frac{b}{b-1}} \quad (1)$$

where I(T) is the glow-peak intensity, I_m is the maximum glow-curve intensity, E (in electron-volts, eV) is the activation energy, k is the Boltzmann constant, T is the temperature (expressed in Kelvin degrees, K), T_m is the value of the temperature at the peak maximum (in K),

$Z_m = 1 + (b-1)/\Delta_m$. In this formula the parameter b is the so-called kinetic order.

When the glow peak is a composite peak, compounded of m overlapping glow peaks, the method consists of a minimization of the χ^2 –function

where I_i are the measured glow-curve intensity values, $I(T_i)$ are the values of each partial glow curve at the temperature T_i, n is the number of the experimental points and m is the number of the partial glow peaks compounding the observed peak.

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Enhancing Security through Deep Learning-Based Face Detection: Leveraging CASIA Datasets

B R Nayak,P Chand,P K Nayak,A K Sahoo

Abstract*: Recently, face recognition technology has become increasingly important for safety purposes. Masks are now required in most countries and are increasingly used. Public health professionals advise people to conceal their facial features outdoors to reduce COVID-19 transmission by 65%. Detecting people without masks on their faces is crucial. This has become widely used as face recognition outperforms PINs, passwords, fingerprints, and other safety verification methods. Sunglasses, scarves, caps, and makeup have made facial identification harder in recent decades. Thus, such masks impact facial recognition performance. Face masks also make traditional technology for facial recognition ineffective for face authorization, security checks, school monitoring, and cellphone and laptop opening. Thus, we proposed Masked Facial Recognition (MFR) to recognize veiled and exposed-face people so they don't need to remove their masks to verify themselves. This deep computing model was trained with Inception Res Network V1. CASIA is responsible for preparing pictures and using LFW to validate models. Dlib creates masked datasets utilizing vision algorithms. About 96% accuracy was achieved using our three models that were trained. Thus, covered and uncovered recognition of faces and detection techniques in security and safety verification might easily be used. These systems can be used in various settings, such as airports, train stations, and other public places, to enhance security and prevent crime. Overall, deep learning within face recognition technology has significant potential for improving safety and security in various settings.

***Keywords*: CASIA Dataset, Dlib, face recognition, Masked Facial Recognition.**

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I. INTRODUCTION

As a result of COVID-19, face mask usage is expanding quickly; everyone inside and outside of buildings must consistently wear facial coverings to mitigate the transmission of the illness. To prioritize the well-being and security of all individuals, it is imperative to accurately discern the presence of individuals using facial masks. Face detection refers to the computational process of finding and localizing a face within an image or a pre-defined image within a database. On the other hand, face recognition involves the automated identification of an individual based on collected footage or photos [1]. The ongoing study on this subject holds substantial significance as it has growing relevance in several industries, such as ATMs, illegal identification, controlling entry, webinars, passport and license provision, and outdoor monitoring.

This security system is becoming more sophisticated, causing significant changes in our daily lives. As a result, the Safety system contains a critical regulation to protect humans. Regarding applications in practice, cover face recognition is one concerning the study fields. It could be used for detection in criminal investigations [2]. Due to the prevalence of facial masks in this particular case, a specific area is protected by surveillance footage for the site's safety [3]. It watches persons who did not wear masks to sensitive regions and compares their shots to database images to define the individual's exposure to the location [4][25][25][27][28]. Many techniques for recognizing masked faces, including varied perspectives [5], are known. This work focuses on developing an algorithm for cover facial recognition utilizing various CNN learners. Mask face detection is faster than alternatives for safety concerns, considering numerous faces can be studied or identified during the precise period. Working with CNN provides more preciseness in detecting the mask face in a particular region, and it is more effective whenever the individual's face enters a specific area of a live camera, so it is swifter over others. Despite the reality that facial identification studies served as a foundation for studies about masked facial recognition, it could be more effective. Reason detection focuses on distinguishing characteristics that prove it represents a face, while the mask obscures half or a more significant portion of the face features. As an outcome, this is developed further to study research models that may determine veiled characteristics.

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Finite Element Analysis of Weld Joint Strength for Curved Plate Overlaps: Optimizing Pressure Vessel Skirt Support Design

A K Nayak,Tusar kanta Kumbhar,Dipti Ranjan Panda

Abstract: *Weld joints form an important part of pressure vessels, they are highly essential for structural integrity of the system. Typical welds are done on flat surfaces and their strengths are well catalogued for reference. If a lap joint is required for longitudinal plates, the reference for taking overlap length is available. When a lap joint is required for curved plates, no reference is available for it. The objective of the project is to form certain set of guidelines or set of formulations which will serve as a guideline for overlap length in lap joint of curve plates. Analysis type for this will be Structural Non Linear Finite Element Analysis i.e. by using ANSYS 12.0 Workbench for modeling and ANSYS 12.0 for Structural Non Linear Analysis. No of Estimated Analysis conducted is 53 for three different cases of analysis.*

We have studied by analysis and experimentation of 03 cases, for which we required to conduct 53 analyses. After this analysis, experimentation results and their comparison we have to make the conclusion or forming certain set formulations which will serve as a guideline for welds of curve plates with an overlap.

Keywords: *Lap Joint Design, Overlaping angle, Ultimate Tensile Strength of Weld Joint.*

I. INTRODUCTION

Design of Lap Joint

A lap joint is formed by overlapping two plates and welding them either in the joint where they meet. Lap joints can be used to weld pieces of dissimilar thicknesses and materials. Lap joints also greatly reduce the number of critical parameters in the weld. Unlike a butt weld, which performs a similar function, the lap joint does not require that the cut faces be perfectly flat and parallel. Rather, in a lap joint, the only critical surfaces are the faces of the parts where they overlap, and the tolerances on this overlap are fairly high. The designing of lap joint, care to be taken for lap joint, testing of lap joint and the strength of f lap joint is very important factors

Welded connections involve two components that are both under the direct control of the designer: the joint type, and the weld type. Failures in or near the weld may be the result of an improperly designed joint.

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In this Design File, the principles that should be applied when designing lap joints are presented. A lap joint looks very simple, and it may seem odd that this plain configuration of material would need to be carefully considered. The complication stems from the fact that loads do not instantaneously transfer from one member to another. The three joints in one butt joint, and two lap joints show the differences in the flow of stress through the two joints. The butt joint includes a groove weld while the lap joints use fillet welds. The difference is, stress flow is more associated with the joint type, as opposed to the weld type. The resultant differences in stress distribution result in the need for rules to proportion the lap connection components.

A lap joint and the corresponding welds may seem simple, but a variety of important details need to be considered. The following checklist may be helpful are the parts sufficiently restrained to prevent joint rotation? If not, use at least two rows of welds. Is the overlap at least five times the thickness of the thinner part? And, is it at least 1 in. (25 mm)? For longitudinal welds, are they at least as long as the distance between them? For lap joints with only longitudinal welds, is the distance between the welds less than 8 in. (200 mm)? For cyclically loaded members, is this distance also less than 16 times the thinner member? For material thicknesses of 1/4 in. (6 mm) or more, has the fillet weld leg size been reduced by 1/16 in. (2 mm)?Have the fillet welds been detailed to terminate at least one weld size from the end of the piece? Are they detailed to avoid tying the welds together on opposite sides of the common plane of contact? One final note: these provisions are intended to be applied to lap joints designed to transfer stresses between members. For situations involving lap joints but where the joint is more associated with the assembly of a member, and not with transfer of calculated forces, the principles presented above are not necessarily applicable.[1]

Maximum Weld Size in Lap Joints by The maximum fillet weld size detailed along the edges of base metal in lap joints shall be the following (1) the thickness of the base metal, for metal less than 1/4 in. [6 mm] thick less than the thickness of the base metal, for metal 1/4 in. [6 mm] or more in thickness (see Figure 2.1, Detail B), unless the weld is designated on the shop drawing to be built out to obtain full throat thickness for a leg size equal to the base metal thickness. In the as-welded condition, the distance between the edge of the base metal and the toe of the weld may be less than 1/16 in. [2 mm] provided the weld size is clearly verifiable.[3]

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