2021 International Conference on Advanced Mechatronics, **Intelligent Manufacture and Industrial Automation (ICAMIMIA 2021)**

Surabaya, Indonesia 8-9 December 2021



IEEE Catalog Number: CFP21AWY-POD **ISBN:**

978-1-6654-9970-5

Copyright © 2021 by the Institute of Electrical and Electronics Engineers, Inc. All Rights Reserved

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

*** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.

IEEE Catalog Number:	CFP21AWY-POD
ISBN (Print-On-Demand):	978-1-6654-9970-5
ISBN (Online):	978-1-6654-9969-9

Additional Copies of This Publication Are Available From:

Curran Associates, Inc 57 Morehouse Lane Red Hook, NY 12571 USA Phone: (845) 758-0400 Fax: (845) 758-2633 E-mail: curran@proceedings.com Web: www.proceedings.com



Table of Content

2021 International Conference on Advanced Mechatronics, Intelligent Manufacture and Industrial Automation (ICAMIMIA)

No	Paper Title	Page
1.	Lumped Parameter Estimation of a Low Cost DC Motor for Position Controller Design	1
2.	PD Controller and Dynamic Compensation Design	7
	for a DC Motor based on Estimated Parameters	
3.	Low Cost LiDAR Prototype Design for 3D Mapping	13
4.	Single-Axis Solar Tracker for Solar Panel with Power and Cost Analysis	18
5.	Process Dynamics Modeling on Polishing Unit of Artificial Neural Network-Based Produced Water Treatment System	23
6.	Analysis of the Polishing Unit Operating Condition Diagnostic System Analysis Based on an Expert System: A Case Study at PT. Saka Indonesia Pangkah Limited	28
7.	A Novel Feature of Smart Mask: Monitoring and Control System of Respiratory Conditions Using IoT for High-Activity-Person During New Normal Era	35
8.	Prototype Design of Automatic Light Intensity Control in Smart Green House	41
9.	Evaluation Framework for Decision Making Based On Sentiment Analysis in Social Media	47
10.	Design and Implementation of Nutrition Control System for Optimization of Hydroponic Plant Growth	52
11.	DC Distribution Modeling and Simulation of Wind Power Generation on Ship using Buck and Boost Converter	58
12.	Fluid Viscosity Measurement With CapillaryPipe Based On Internet Of Things (IoT)	66
13.	Design and Economic Analysis of On Grid - Off Grid Microhydro Power Plants: A Case Study in East	73

	Java, Indonesia	
14.	Methane Content Measurement System in Biogas as Generator Fuel	79
15.	Rearrangement Secret Data Steganography Technique using Fluid Genetic Algorithm	84
16.	Capacitor Bank and Single Tuned Filter Design for Power Quality Improvement on EV Battery Swap	90
	Station	
17.	Cervical Cancer Diagnosis Using ERNN and PSOGA	96
18.	Classification of Hotel Customer based on Support Vector Machine	102
19.	Prototype Design of IoT Water Turbidity SensorBased For Freshwater Fisheries	108
20.	Prototype Design of Automatic Switching Speed of Exhaust Fan For Air Quality Control Based On IoT	114
21.	Design of Light Automation System Using Thermal Camera and LDR Sensor	120
22.	Design and Implementation of Rencana Pembelajaran Semester (RPS) Document Generation System	125
23.	Design Control of Autonomous Surface Vehicle Position Using Proportional Integral Derivative Method	131
24.	Deep Learning Based Facial Emotion Recognition using Multiple Layers Model	137
25.	Detection of Nutrient Deficiency in Rice Plants Based on Leaf Image	143
26.	Constant Power Generation Optimization Using Modified Fuzzy Logic MPPT in Grid Connected Wind Turbine System	148
27.	Motion Control Design and Analysis of UR5 Collaborative Robots Using Proportional Integral Derivative (PID) Method	157

28.	Motion Control Design and Analysis of UR5 Collaborative Robots Using Fuzzy Logic Control (FLC) Method	162
29.	Solar DC Power System Monitoring for Thermoelectric Mini-Fridge Using Blynk App	168
30.	Experimental Performance of a Peltier Cooler Box Employing Water Block Heatsink	173
31.	Sliding Mode Control for Autonomous Vehicle Systems	177
32.	Social Network Analysis Algorithms, Techniques and Methods	182
33.	PV Placement for Reducing Losses Based On Load Bus Capacity	190
34.	Segmentation of Brain Tumor Objects in Magnetic Resonance Imaging (MRI) Image using Connected Component Label Algorithm	195
35.	Implementation of Online Monitoring System of Crude Oil Pipeline Surface Facility to Deal with Data Mining Environment Technology	199
36.	Clustering Based Oil Production Rate Forecasting Using Dynamic Time Warping With Univariate Time Series Data	204
37.	Developing RGB Image Steganography using Travel Salesman Problem Modelling	209
38.	Signal Reconstruction using Inter-microphone Time Difference for Bearing Fault Diagnosis	214
39.	Design and Repeatability Test of a 6 Degree of Freedom Robotic Arm	218
40.	Design of Remotely Operated Vehicle Prototype for Ship Biofouling Inspection on Berth	223
41.	Realtime Vehicle Counting Method using Haar Cascade Classifier Model	229
42.	Masked Face Recognition by Applying SSD and ResNet Model for Attendance System	234
43.	Selection of Wind Farm Locations using AHP and	239

	TOPSIS Methods (Case Study: Cilacap Regency)	
44.	PSO based on Generator Scheduling for Low	247
	Voltage Direct Current Distribution System	
	onboard	
	Ship with Mechanical Propulsion System	
45.	Household Electrical Load Forecasting: a Hybrid	253
	of	
	Linear Models and Radial Basis Function Neural	
	Network	
46.	DGA-Based Early Transformer Fault Detection	258
	using Rough Set Theory Classifier	
47.	Identification of Features in ANN's Black Box	263
	using	
	Dimensional Reduction and Correlation	
	Analysis: A	
	Case Study of Cardiovascular Disease Dataset	
48.	Thermochromic/PVP Composite Film for	267
	Surface	
10	Defects Detection Using Visible Spectroscopy	272
49.	Metal Oxide (ZnO, TiO2) Layer Affects	272
	Sensitivity	
	of Multisample Colorimetric Detection in Microfluidic Paper-based Biosensor	
50.	Point-to-point Destination of Mobile Robot	278
50.	using	270
	Linear Odometry	
51.	Prototype of Dual Axis Tracking System For	283
	Optimization of Energy Harvesting on The	
	Miniature Photovoltaic Array	
52.	Design of pH Control System and Water	287
	Recirculation in Aquaponic Cultivation Using	
	Mamdani Fuzzy Logic Control	
53.		293
	Automated Barrier Gate for Housing Estate	
	Security	
	System Using QR Code Based on Android	
	Application	200
54.	Prototype Design of CNC Machining Coolant	298
	Wastewater Treatment System Using Fuzzy	
	Logic Controller	
	Controller	
		<u> </u>

55. Electrical Energy Consumption Monitoring System and Motor Damage Detection on Conveyor Using Fuzzy Method 304 56. A Computer Vision-based for Fish Size Measurement 311 56. A Computer Vision-based for Fish Size Measurement 311 57. Automatic Transfer Switch with Website Monitoring for On-grid Solar Home System 316 58. Load Shedding Automation System On Smart Using Fuzzy Logic Method 320 59. Comparison of Voltage Control Method on KY SOURCES IN SIMAN VILLAGE, LAMONGAN REGENCY: ESTIMATION USING PHOTOVOLTAIC SYSTEM MODELING 330 61. PV Power Forecast Based on Artificial Neural Network at Indonesia Shopping Mall PV Rooftop S 335			
Motor Damage Detection on Conveyor Using Fuzzy MethodSize 31156.A Computer Vision-based for Fish Size Measurement31657.Automatic Transfer Switch with Website Monitoring for On-grid Solar Home System31658.Load Shedding Automation System On Smart Meter32058.Load Shedding Automation System On Smart Using Fuzzy Logic Method32559.Comparison of Voltage Control Method on KY Converter32560.POTENTIAL ANALYSIS OF SOLAR ENERGY SOURCES IN SIMAN VILLAGE, LAMONGAN REGENCY: ESTIMATION USING PHOTOVOLTAIC SYSTEM MODELING33561.PV Power Forecast Based on Artificial Neural Network at Indonesia Shopping Mall PV Rooftop335	55.		304
Fuzzy MethodFuzzy Method56.A Computer Vision-based for Fish Size Measurement31157.Automatic Transfer Switch with Website 		System and	
MethodMethod56.A Computer Vision-based for Fish Size Measurement31157.Automatic Transfer Switch with Website Monitoring for On-grid Solar Home System31658.Load Shedding Automation System On Smart Meter Using Fuzzy Logic Method32059.Comparison of Voltage Control Method on KY Converter32560.POTENTIAL ANALYSIS OF SOLAR ENERGY SOURCES IN SIMAN VILLAGE, LAMONGAN REGENCY: ESTIMATION USING PHOTOVOLTAIC SYSTEM MODELING33561.PV Power Forecast Based on Artificial Neural Network at Indonesia Shopping Mall PV Rooftop335		Motor Damage Detection on Conveyor Using	
56.A Computer Vision-based for Fish Size Measurement31157.Automatic Transfer Switch with Website Monitoring for On-grid Solar Home System31658.Load Shedding Automation System On Smart Meter Using Fuzzy Logic Method32059.Comparison of Voltage Control Method on KY Converter32560.POTENTIAL ANALYSIS OF SOLAR ENERGY SOURCES IN SIMAN VILLAGE, LAMONGAN REGENCY: ESTIMATION USING PHOTOVOLTAIC SYSTEM MODELING33561.PV Power Forecast Based on Artificial Neural Network at Indonesia Shopping Mall PV Rooftop331		Fuzzy	
Measurement57.Automatic Transfer Switch with Website Monitoring for On-grid Solar Home System31658.Load Shedding Automation System On Smart Meter32058.Load Shedding Automation System On Smart Meter32059.Comparison of Voltage Control Method on KY Converter32560.POTENTIAL ANALYSIS OF SOLAR ENERGY SOURCES IN SIMAN VILLAGE, LAMONGAN REGENCY: ESTIMATION USING PHOTOVOLTAIC SYSTEM MODELING33561.PV Power Forecast Based on Artificial Neural Network at Indonesia Shopping Mall PV Rooftop335		Method	
57.Automatic Transfer Switch with Website Monitoring for On-grid Solar Home System31658.Load Shedding Automation System On Smart Meter Using Fuzzy Logic Method32059.Comparison of Voltage Control Method on KY Converter32560.POTENTIAL ANALYSIS OF SOLAR ENERGY SOURCES IN SIMAN VILLAGE, LAMONGAN REGENCY: ESTIMATION USING PHOTOVOLTAIC SYSTEM MODELING33561.PV Power Forecast Based on Artificial Neural Network at Indonesia Shopping Mall PV Rooftop336	56.	A Computer Vision-based for Fish Size	311
Monitoring for On-grid Solar Home System58.Load Shedding Automation System On Smart Meter32058.Load Shedding Automation System On Smart Using Fuzzy Logic Method32559.Comparison of Voltage Control Method on KY Converter32560.POTENTIAL ANALYSIS OF SOLAR ENERGY SOURCES IN SIMAN VILLAGE, LAMONGAN REGENCY: ESTIMATION USING PHOTOVOLTAIC SYSTEM MODELING33061.PV Power Forecast Based on Artificial Neural Network at Indonesia Shopping Mall PV Rooftop335		Measurement	
for On-grid Solar Home System32058.Load Shedding Automation System On Smart Meter32058.Using Fuzzy Logic Method32059.Comparison of Voltage Control Method on KY Converter32560.POTENTIAL ANALYSIS OF SOLAR ENERGY SOURCES IN SIMAN VILLAGE, LAMONGAN REGENCY: ESTIMATION USING PHOTOVOLTAIC SYSTEM MODELING33061.PV Power Forecast Based on Artificial Neural Network at Indonesia Shopping Mall PV Rooftop335	57.	Automatic Transfer Switch with Website	316
58.Load Shedding Automation System On Smart Meter Using Fuzzy Logic Method32059.Comparison of Voltage Control Method on KY Converter32560.POTENTIAL ANALYSIS OF SOLAR ENERGY SOURCES IN SIMAN VILLAGE, LAMONGAN REGENCY: ESTIMATION USING PHOTOVOLTAIC SYSTEM MODELING33061.PV Power Forecast Based on Artificial Neural Network at Indonesia Shopping Mall PV Rooftop335		Monitoring	
MeterUsing Fuzzy Logic Method59.Comparison of Voltage Control Method on KY Converter32560.POTENTIAL ANALYSIS OF SOLAR ENERGY SOURCES IN SIMAN VILLAGE, LAMONGAN REGENCY: ESTIMATION USING PHOTOVOLTAIC SYSTEM MODELING33061.PV Power Forecast Based on Artificial Neural Network at Indonesia Shopping Mall PV Rooftop335		for On-grid Solar Home System	
Using Fuzzy Logic Method59.Comparison of Voltage Control Method on KY Converter32560.POTENTIAL ANALYSIS OF SOLAR ENERGY SOURCES IN SIMAN VILLAGE, LAMONGAN REGENCY: ESTIMATION USING PHOTOVOLTAIC SYSTEM MODELING33061.PV Power Forecast Based on Artificial Neural Network at Indonesia Shopping Mall PV Rooftop335	58.	Load Shedding Automation System On Smart	320
59.Comparison of Voltage Control Method on KY Converter32560.POTENTIAL ANALYSIS OF SOLAR ENERGY SOURCES IN SIMAN VILLAGE, LAMONGAN REGENCY: ESTIMATION USING PHOTOVOLTAIC SYSTEM MODELING33061.PV Power Forecast Based on Artificial Neural Network at Indonesia Shopping Mall PV Rooftop335		Meter	
Converter60.POTENTIAL ANALYSIS OF SOLAR ENERGY SOURCES IN SIMAN VILLAGE, LAMONGAN REGENCY: ESTIMATION USING PHOTOVOLTAIC SYSTEM MODELING33061.PV Power Forecast Based on Artificial Neural Network at Indonesia Shopping Mall PV Rooftop335		Using Fuzzy Logic Method	
60.POTENTIAL ANALYSIS OF SOLAR ENERGY SOURCES IN SIMAN VILLAGE, LAMONGAN REGENCY: ESTIMATION USING PHOTOVOLTAIC SYSTEM MODELING33061.PV Power Forecast Based on Artificial Neural Network at Indonesia Shopping Mall PV Rooftop335	59.	Comparison of Voltage Control Method on KY	325
SOURCES IN SIMAN VILLAGE, LAMONGAN REGENCY: ESTIMATION USING PHOTOVOLTAIC SYSTEM MODELING33561.PV Power Forecast Based on Artificial Neural Network at Indonesia Shopping Mall PV Rooftop335		Converter	
LAMONGAN REGENCY: ESTIMATION USING PHOTOVOLTAIC SYSTEM MODELING 61. PV Power Forecast Based on Artificial Neural Network at Indonesia Shopping Mall PV Rooftop	60.	POTENTIAL ANALYSIS OF SOLAR ENERGY	330
PHOTOVOLTAIC SYSTEM MODELING 61. PV Power Forecast Based on Artificial Neural 335 Network at Indonesia Shopping Mall PV Rooftop 335		SOURCES IN SIMAN VILLAGE,	
MODELING61.PV Power Forecast Based on Artificial Neural Network at Indonesia Shopping Mall PV Rooftop335		LAMONGAN REGENCY: ESTIMATION USING	
61. PV Power Forecast Based on Artificial Neural 335 Network at Indonesia Shopping Mall PV Rooftop		PHOTOVOLTAIC SYSTEM	
Network at Indonesia Shopping Mall PV Rooftop		MODELING	
	61.	PV Power Forecast Based on Artificial Neural	335
S		Network at Indonesia Shopping Mall PV Rooftop	
		S	