

2022 25th International Conference on Mechatronics Technology (ICMT 2022)

**Kaohsiung, Taiwan
18-21 November 2022**



**IEEE Catalog Number: CFP22U19-POD
ISBN: 978-1-6654-7351-4**

**Copyright © 2022 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:	CFP22U19-POD
ISBN (Print-On-Demand):	978-1-6654-7351-4
ISBN (Online):	978-1-6654-6195-5

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

CURRAN ASSOCIATES INC.
proceedings
.com

TABLE OF CONTENTS

Integral Non-Singular Terminal Sliding Mode Control for Tri-Axis Piezoelectric Stage	1
<i>Kuo-Ming Chang, Cheng-Han Li, Yung-Tien Liu</i>	
Developing a Robot Arm Control Training System by Using Blockly Programming Techniques for Mechatronics Engineers-In-Training	5
<i>Albert W. L. Yao, J. T. Guo, Y. T. Chiang</i>	
EOD Robot Mechatronic Modelling and Trajectory Optimization Through Chebyshev Polynomials	8
<i>Adolfo Senatore, Giuseppe Ventura</i>	
A New LMI-Based Non-Iterative Design Method for Static Output Feedback Controllers for Linear Systems.....	13
<i>Hidetoshi Oya, Satoshi Hayakawa, Shunya Nagai, Kazushi Nakano</i>	
Model Predictive Control for Stabilization of Underwater Vehicle Dynamics	17
<i>Yusei Fujiwara, Tomoaki Hashimoto</i>	
Nonlinear Model Predictive Control for Autonomous Flight of Aircrafts	21
<i>Hironori Masaoka, Tomoaki Hashimoto</i>	
Feasibility Assessment of Differential Voltage Analysis to Detect Lithium Plating in Battery Modules for Electric Vehicles	25
<i>Nithin Somasundaran, Nessa Fereshteh Saniee, Truong Dinh Quang, James Marco</i>	
Automatic Generation of Personalized Golf Video Using Integrated Technologies and Methods	31
<i>Fu-Kuei Chen, Hsin-Piao Lin, Chao-Hsu Yang</i>	
Development of a Robotic-Machining Based Variable Cutting Force Servo System for Casting Scrap Removal	35
<i>Yi Kai Wang, Chi-Ying Lin</i>	
Prototyping and Demonstration of a Cloud-Based AI Smart Plug System	39
<i>Zuo-Ren Chen, Chun-Fu Chen, Sin-Yu Huang, Yung-Wen Huang, Rongshun Chen</i>	
Analyzing Continuous Conduction Mode Closed-Loop DC-DC Buck Converters with a Linear Method	43
<i>Shih-Hsiung Twu, Li-Shan Ma</i>	
Precise Identifying Assets Inside a Metal Cabinet Using RFID and Machine Learning Method.....	49
<i>Fu-Kuei Chen, Hsin-Piao Lin, Sheng-Kai Zhou</i>	
Polynomial Control of Nonlinear Pendulum System	53
<i>Chein-Chung Sun, Cheung-Chieh Ku, Chang-Hua Lien, Wen-Jer Chang, Shao-Hao Jian</i>	
A Novel Approach to High Performance of RFID-Based Asset Tracking in a Metal Cabinet	57
<i>Fu-Kuei Chen, Hsin-Piao Lin, Tsai-Sheng Hsu</i>	
Research on Detection of Surface Defects of Lamps with Multi-Color Light Sources	61
<i>Tsung-Liang Wu, Yu-Ying Zhan</i>	
CoilFORM: The Impact of the Winding on the Flat Spiral Shape Memory Alloy Coils	65
<i>Ahmed Amine Chafik, Jaafar Gaber, Souad Tayane, Mohamed Ennaji</i>	

Steering Control of a Legged Walking Machine Composed of Many Leg Mechanism Units with 1DoF.....	69
<i>Nobuyuki Iwatsuki, Soichiro Shikanai, Takuya Miyazaki</i>	
A Machine Learning Method for Predicting Part Weight, Dimensions, and Residual Stress During Injection Molding.....	73
<i>Ming-Shyan Huang, Kun Cheng Ke, Po Wei Wu</i>	
Improved Trigger Time of Force Sensorless Power-Assisted System Based on Fuzzy Logical Strategy and EMG Signal.....	77
<i>Po-Wen Hsueh, Tien-Min Kao, Jian-Hua Wu, Tung-Kuan Liu</i>	
Comparison of Different Types of Lens for Defect Detection of Inner Thread Based on Deep Learning.....	81
<i>Lih-Ping Huang, Anh-Tuan Dang, Quang-Cherng Hsu</i>	
Research on Optimization of Dielectric Layer Thickness Standard Deviation of Multilayer Ceramic Capacitors-An Empirical Study on Y Manufacturing Company.....	85
<i>Cheng-Wei Wu, Tung-Kuan Liu, Po-Wen Hsueh</i>	
Tribo-Polarity Enhancement of Polyvinylidene Fluoride for Liquid-Solid Triboelectric Nanogenerator.....	89
<i>Duy Linh Vu, Kyoung Kwan Ahn</i>	
Deep Convolutional Neural Network Based Fabric Color Difference Detection.....	93
<i>Chao-Ching Ho, Chao-Wei Yu</i>	
Nozzle Pressure and Clamping Force Based Injection Molding Process Parameter Optimization and Adaptive Process Quality Control.....	98
<i>Guan-Yan Liou, Feng-Jung Cheng, Wei-Jie Su, Sheng-Jye Hwang, Hsin-Shu Peng, Hsiao-Yeh Chu</i>	
Rack Inlet Temperature Prediction Based on Deep Learning.....	102
<i>Yu-Hsuan Peng, Chien-Ming Lee, Kai-Yang Tung, Rongshun Chen</i>	
Time Series Prediction for Thermal Management in Server Applied with Deep Learning.....	106
<i>Hsin-Cheng Chu, Chien-Ming Lee, Kai-Yang Tung, Rongshun Chen</i>	
An Improved Energy Management Strategy for Fuel Cell Hybrid Power System Based on Compensator Design of DC-DC Converters.....	110
<i>Hoai-An Trinh, Hoai-Vu-Anh Truong, Kyoung-Kwan Ahn</i>	
Development of Powertrain Integrated Energy Regeneration System in Hybrid Hydraulic Excavator.....	116
<i>Tri Cuong Do, Kyoung Kwan Ahn</i>	
A Lightweight Design of 5G Private Network with Edge Computing.....	121
<i>Chuan-Sheng Lin</i>	
Analysis of Body Surface Temperature Data Based on Wavelet Transform for Detection of Optimal Insemination Phase in Cattle.....	123
<i>Kansei Matsumoto, Tatsuya Komatsu, Ryotaro Miura, Hidetoshi Oya, Yoshikatsu Hoshi</i>	
Force Observer-Based Admittance Control Design for Robot Manipulators.....	129
<i>Hoang Vu Dao, Kyung Sin Kwak, Kyoung Kwan Ahn</i>	

Combining Miryoku Engineering and Evaluation Grid Method Explore Wireless Headphone Design Appealing Factors	133
<i>Ming-Yen Hsieh, I-Chen Wang</i>	
Intelligent Adjustment of Temperature Control Parameters Based on Deep Reinforcement Learning for Stretch Blow Molding Machine.....	137
<i>Ping-Cheng Hsieh, Guan-Lin Su, Yi-Te Lin, Wei-Bo Lin</i>	
Image Tracking and Prediction of Offshore Tsunami with Particle Filters.....	141
<i>Miin-Jong Hao, Wen-Xin Hsu</i>	
DC Output Cellulose-Based Electric Generator Based on Materials Work Functions.....	145
<i>Quang Tan Nguyen, Kyoung Kwan Ahn</i>	
Disposable Soft Robotic Gripper Fabricated from Ribbon Paper with a Few Steps of Origami Folding	150
<i>Naoki Ando, Kohei Takahashi, Sadayoshi Mikami</i>	
Extended State Observer Based Sliding Mode Control for 6 DOF Manipulator with Lumped Uncertainties.....	154
<i>Duc Thien Tran, Hai Ninh Tong, Minh Phuc Tran, Thanh Binh Ha, Nguyen Manh Hùng, Kyoung Kwan Ahn</i>	
Surface Finish of Stainless Mold Steel Using Vibration-Assisted Ball Polishing Process.....	160
<i>Fang-Jung Shiou, Zhao-Li Ding, Sun-Peng Lin</i>	
Synchronous PID Controller for a 4-DOF Parallel Manipulator in Practice	163
<i>Duc Thien Tran, Nguyen Thanh Nha, Mai Van Phung, Nguyen Phi Long, Nguyen Minh Tam, Kyoung Kwan Ahn</i>	
The CCD-Algebraic Algorithm to Solve the Inverse Kinematic and Control the Rotation of 6-DOF Redundant Manipulator in Three Spatial Dimensions.....	167
<i>Duc Thien Tran, Trong Luong Tran, Minh Tri Duong, Hoang Vu Dao, Kyoung Kwan Ahn</i>	
A Novel Driver Circuit for Piezoelectric Ceramic Actuator Featuring with Input-Current-Shaping and Soft-Switching.....	173
<i>Chun-An Cheng, Hung-Liang Cheng, Chien-Hsuan Chang, En-Chih Chang, Long-Fu Lan, Hao-Fang Hsu</i>	
Gasoline-Electric Hybrid Propulsion System with Synchronverter	177
<i>Hang Yin</i>	
Modelling and Control of Smart MicroGrid Integrated Renewable Energy Systems	181
<i>Arpan Deb, B Nandhkishore, Dinh. Truong, Banibrata Mukherjee, Jun Jie Chong</i>	
A Novel Driver Circuit for Supplying LED Projection Lamps with High-Power-Factor and Soft-Switching.....	185
<i>Chun-An Cheng, En-Chih Chang, Ching-Min Lee, Long-Fu Lan, Sheng-Hong Hou, Cheng-Kuan Lin</i>	
Single-Phase VSM Based on Dq Coordinate	189
<i>Hang Yin</i>	
A Computer-Vision-Aided Quality Control Measuring System.....	193
<i>Bor-Tsuen Lin, Chia-Hung Chang, Chun-Chih Kuo, Bo-Yun Hou</i>	

A Force-Sensing Semi-Automated Robotic Needle Driver for Minimally Invasive Surgery	197
<i>Armin Ehrampoosh, Bijan Shirinzadeh, Joshua Pinski, Julian Smith, Randall Moshinsky, Yongmin Zhong</i>	
Novel Hybrid Energy Regeneration System for Electric Construction Machinery	202
<i>Yingxiao Yu, Jiangding Zhou, Kun Wang</i>	
Radiometric and Geometric Correction Methods for SWIR Cameras	206
<i>Ho-Lin Tsay, Chih-Hao Lin, Ming-Fu Chen, Po-Ming Lin, Chun-Chieh Lien, Hui-Jean Kuo</i>	
Development of Multipoint Galvo-Scan Chromatic Confocal Surface Microscopy for AOI	210
<i>Yu-Feng Chou, Fu-Sheng Yang, Han-Ju Tsai, Wei-Jei Peng, Ming-Fu Chen, Liang-Chia Chen</i>	
Thermal Error Prediction of Ball Screws Based on Partial Least Square Method with Consideration of Friction Works	213
<i>Chien-Hsiang Hung, Meng-Shiun Tsai, Mao-Qi Hong, Yu-Hung Wang, Wen-Fang Chen</i>	
Neural Network Feed Rate Modulation for Ball-End Milling of Inclined Surfaces.....	217
<i>Chen-Jung Li, Wei Chang</i>	
Low-Cost and Sustainable Pick and Place Solution by Machine Vision Assistance.....	220
<i>Elven Kee, Chong Jun Jie, Choong Zi Jie, Michael Lau</i>	
Development of a Senior-Friendly Foldable Wheelchair Using Design Thinking.....	224
<i>I Jen Sung, I-Chen Wang, Ting Hsien Lu, Ming-Yen Hsieh</i>	
Evaluating Operationality of Human Interfaces with Reaction Force Control Using DP Matching	228
<i>Kairi Morita, Seiichiro Katsura</i>	
Autonomous Boundary Detection Using Image Recognition for Robotic Lawn Mower.....	232
<i>Meng-Huai Wu, Chia-Wei Chang, Jyh-Cheng Yu</i>	
Uncertainty Analysis of Effective Focal Length of Optical Measurement System	236
<i>Hui-Jean Kuo, Ho-Lin Tsay, Po-Ming Lin, Ming-Fu Chen</i>	
Solar Energy Profiles for a Blockchain-Based Energy Market	239
<i>Ameni Boumaiza</i>	
Analysis of Internal Temperature Variations of Lithium-Ion Batteries During Fast Charging	244
<i>Nessa Fereshteh Saniee, Nithin Somasundaran, Begum Gulsoy, Tim Vincent, Mark Amor-Segan, James Marco</i>	
Modeling and Feedback Linearization of an Electric Hovercraft for Path Tracking.....	249
<i>William Retnaraj, Somnath Sengupta, Truong Quang Dinh, Jun Jie Chong</i>	
Advanced Control Strategies for High Performance Four-Wheel Drive Electric Vehicle	255
<i>Rohit Dhamija, Souvik Basak, Abhishek Singh, Somnath Sengupta, Truong Quang Dinh, Jong Il Yoon</i>	
Baseline Strategy for Remaining Range Estimation of Electric Motorcycle Applications	261
<i>Truong Minh Ngoc Bui, Nicolas Holmes, Truong Quang Dinh</i>	

Author Index