2019 3rd Conference on Vehicle Control and Intelligence (CVCI 2019)

Hefei, China
21 – 22 September 2019

IEEE Catalog Number: CFP19U30-POD
ISBN: 978-1-7281-2684-5

Copyright © 2019 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: CFP19U30-POD
ISBN (Print-On-Demand): 978-1-7281-2684-5
ISBN (Online): 978-1-7281-2683-8

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 Contents

Fuzzy-Sliding Mode Control based Yaw Stability Control Algorithm for Four-in-wheel-motor Drive Electric Vehicle 1
Lie Guo, Pingshu Ge and Dachuan Sun

Research on Dynamic Characteristics of Lateral Sloshing in Liquid Tank Semi-trailer 7
Guangqin Peng, Zhiguo Zhao, Taifeng Liu, Han Hu and Mengqi Feng

Study on Dynamic Characteristics of Longitudinal Sloshing in Liquid Tank Semi-trailer ... 13
Mengqi Feng, Zhiguo Zhao, Taifeng Liu, Han Hu and Guangqin Peng

Research on Model Predictive Control Method for Multi-paralleled DC-DC Converters ... 19
Zhiyuan Chen, Bin Duan, Guanguan Zhang, Tao Wang and Chenghui Zhang

Research on track reckoning of Automatic Parking System Based on Multi-information Fusion 24
Bo Zhu, Jiaxin Gu, Dongkui Tan, Chao Chen, Xudong Hu and Maofei Huang

Direct Torque Control of A Segmented Switched Reluctance Motor for BSG in HEVs 31
Kaikai Diao, Xiaodong Sun, Long Chen, Yingfeng Cai, Haoxiang Wang and Jiangling Wu

A High Precision Vehicle Tracking Algorithm Based on Digital Image Correlation 37
Teng Cheng, Jingjing Wang, Bofu Wu, Yaxi Jiang, Xihan Zhu and Qingyu Du

Inconsistency Effect of Internal Resistance on Performance of Lithium-ion Battery Strings 43
Qi Zhang, Naxin Cui, Bin Duan, Yunlong Shang and Chenghui Zhang

State Observer-Based Air-Fuel Ratio Regulation of Compressed Natural Gas Engines 48
Jun Yang, Yonghui Liu, Junyu Guo and Fengyan Yi

Stochastic Adaptive Tracking Control of Electronic Throttle 53
Jun Yang, Yiming Liu, Kesong Zhang, Yanfei Gao and Fengyan Yi

Optimization of Control Strategy for Dual-motor Coupled Propulsion System Based on Dynamic Programming Method 58
Yue Gao, Wenwei Wang and Yiding Li

High-Precision Parameter Identification of Lithium-ion Battery Based on Voltage Signal Reconstruction 64
Fazheng Wen, Rui Zhu, Junming Zhang, Sizhao Gong, Bin Duan and Chenghui Zhang

A Camera-IMU Sensor Fusion for Robust Lane Information on Lateral Control System ... 69
Chien-Hung Yu, Kun Lung Ku and Hung Pan Lin

MPC-based fault tolerant control system for yaw stability of distributed drive electric vehicle 74
Ke Shi and Xiaofang Yuan

Predictive Freeway Overtaking Strategy for Automated Vehicles Using Deep Reinforcement Learning 80
Teng Liu, Zejian Deng, Xiaolin Tang, Hong Wang, Bin Tian, Long Chen and Dongpu Cao

Takagi-Sugeno fuzzy control for the semi-active seat suspension with an electromagnetic damper 86
Xiangjun Xia, Pengfei Liu, Nong Zhang, Donghong Ning, Minyi Zheng and Haiping Du

A finite-time estimation algorithm for updating look-up tables 92
Changhui Wang, Hai Yin, Xiaoyu Wang, Shujie Sun, Yongsheng Chai and Mei Liang

Transient Dynamic Response Analysis of Engine Start for A Hybrid Electric Vehicle 97
Xiaolin Tang, Kai Yang, Teng Liu, Yechen Qin, Dejiu Zhang and Qinghui Ji

Trajectory Planning and Tracking for Autonomous Vehicle Considering Human Driver Personality 103
Chaoyong Zhang, Duanfeng Chu, Nengchao Lv and Chaozhong Wu

Energy Management Strategy of Plug-in Hybrid Electric Vehicles Considering the Temperature Effect of Power Battery 109
Huixin Li, Naxin Cui, Chunyu Wang and Yi Du

Fuzzy Logic Energy Management Strategy Based on Genetic Algorithm for Plug-in Hybrid Electric Vehicles 115
Haozhe Yu

Dynamic Programming Algorithm for Energy Management Strategy of Fuel Cell Electric Vehicle 120
Shengyan Hou, Bing Dong, Yu Zhang and Yunfeng Hu

Adaptive Tracking Control for Active Seat Suspension System with Time-Varying Full State Constraints 126
Aiqing Chen, Yan-Jun Liu, Lei Liu and Ying Gao

The electronic throttle controller based on the model reference adaptive nonlinear triple-step method 132
Zikai Wei, Kai Feng, Yunfeng Hu and Jinwu Gao

Fast Segmentation of 3-D Point Clouds Based on Ground Plane State Tracking 138
Jin Chen, Yafei Wang, Kunpeng Dai and Taiyuan Ma

Optimization design and evaluation of shift point for electric bus based on multi-objective genetic algorithm 144
Yulong Lei, Jingxu Zhang, Xingzhong Li, Yuchen Zhang and Yao Fu

Connected Cruise Control Based on Adaptive Dynamic Programming Considering Inertial Delay 150
Bo Li, Jingkai Wu, Yafei Wang and Lin Wang

Hardware-in-the-loop simulation of electronic differential moment power steering control strategy for multi-axle vehicle 156
Hang Li, Jianqiu Li, Jiayi Hu, Bingkun Cai, Liangfei Xu and Minggao Ouyang

Internal Short Circuit Fault Diagnosis for Lithium-ion Battery Based on Voltage and Temperature 160
Bin Yang, Naxin Cui and Mingchun Wang

Experimental investigation of water-cooling based thermal management for cylindrical Li-ion batteries 166
Mingchun Wang, Changlong Li and Naxin Cui

Topology optimization design of 24GHz high gain microstrip antenna with metamaterial cover 172
Dong Yanzhang and Zhou Jinghao

Study on the Effect of Different AC Excitations on the Internal Heating for Low-Temperature Batteries 176
Nan Wang, Yunlong Shang, Bin Duan, Keke Yu, Tongxiao Wang and Chenghui Zhang

A Review on Source Seeking Control and Its Application to Wheeled Mobile Robots 181
Shen Xu, Yuxuan Wang, Dong Xu, Xiaojun Zhu and Hua Chen

Research on Mechanism and Key Technology of Intelligent Vehicles Brake By Wire system 186
Li Tuantuan, Shi Qin, Zhang Lei, He Lin and Liu Bingjiao

Influence of interconnect resistances on parallel-connected LiFePO4 cells performance 194
Long Chang, Bin Duan, Peng Li, Kang Zhang, Chenghui Zhang and Linjing Xiao

Lateral Stability Control of Four-wheel Steering Vehicles 198
Gaojian Cui, Xiaoqiang Shang, Zeng Li, Fanghu Ning and Xiaodong Wu

Tracking of High-speed Emergency Avoidance Paths for Vehicles Based on Non-linear Active Disturbance Rejection Control 203
Jian Wang, Jinbo Wang and Fengyan Yi

Predictive Ecological Control: Using Road Terrain and Traffic Signal Information for Improving Vehicle Energy Efficiency 207
Bingbing Li, Weichao Zhuang and Nan Chen

Distributed Control Design based on Multi-Agent for Distributed Driving Electric Vehicle 213
Tong Shen, Guodong Yin, Jinhao Liang, Yanjun Ren, Wenhan Huang and Hao Chen

Performance Study of Direct Injection Gasoline Engine Based on Hydrogen Injection Strategy 219
Yaodong Du, Xiumin Yu, Bingzhao Gao, Ping Sun, Wei Dong, Ling He and Weibo Shi

An Optimal Trajectory Planning for Autonomous Vehicles Based on Vehicle Dynamics Constraints 224
Qinghe Liu, Haiwei Liu, Yao Wen, Lijun Zhao and Conggan Ma

Decision-Making for Oncoming Traffic Overtaking Scenario using Double DQN 230
Shuojie Mo, Xiaofei Pei and Zhenfu Chen

Research on Strategy and Algorithm of Lateral Motion Control for Autonomous Driving Electric Vehicle 234
Jian Zhong and Xinbo Chen

Study of Comprehensive Evaluation for L2 Automated Vehicles on Field Test 240
Qin Xia, Kang Liu, Li Huang and Hong Shu

Degree of Hybridization Design for a Fuel Cell/Battery Hybrid Electric Vehicle Based on Multi-objective Particle Swarm Optimization 246
Ke Song, Luoxiang Liu, Feiqiang Li and Cong Feng

Real-Time Estimation of Inertial Parameter for Lightweight Electric Vehicle Using Dual Kalman Filter 252
Xianjian Jin, Junpeng Yang, Tong Zhu, Jiadong Wang and Guodong Yin

Analysis of the Efficiency of Two Different Electric-continuously Variable Transmission for Hybrid Electric Bus 257
Zeng Xiaohua, Zhang Xuanming, Gao Fuwang, Yang Tian, Nie Yanxing and Chen Jianxin

A Novel Gearshift Control Method based on Historical Driving Information 261
Changping Li and Mingxin Kang

Simulation of energy control strategy for hybrid electric vehicle based on modified dynamic programming 266
Jinbo Wang, Jian Wang and Jun Yang

Research on Electric Bulldozer Straight Driving Stability 270
Yi Yuan, Jiangtao Gai, Gen Zeng, Zhengda Han, Zhanchun Sun and Yaoheng Li

Study on the Estimation Method of the Forces on Vehicle Tires for ESC System 276
Jianhua Wang, Weiping Tang, Youkun Zhang and Yongcong Wang

Speed Control of Four-Wheel Independently Actuated Vehicle based on MPC Algorithm 280
Xianfeng Zeng, Hui Jing, Bing Kuang, Fengran Chen, Weibiao An and Shichong Zhao

DOS-Robust Dynamic Speed Tracking Controller for an Integrated Motor-Gearbox Powertrain System of a Connected Car 286
Xiang Li, Xiangyang Xu, Hui Zhang, Peng Dong and Yue Liu

Personalized Controller Design for an Electro-mechanical Booster Braking System 292
Bing Zhu, Haijian Tian and Jian Zhao

Preparation of RGO/Ni Nanoparticles with high-performance microwave absorption 297
Fuli Yang, Xingzhe Hou, Lirui Wang, Xuecong Zhang, Youjiang Li and Miao Yu

Thermal behavior analysis of Pouch Lithium ion Battery using distributed electro-thermal model 302
Tongxiao Wang, Changlong Li, Long Chang, Bin Duan and Chenghui Zhang

A Novel Three-Phase Single-Stage Isolated AC-DC Converter with Symmetrical Structure for Battery Charger 307
Jinqiu Song, Wenlong Ding, Dongjiang Yang, Hao Bai, Chenghui Zhang and Bin Duan

On Development of An Autonomous Ball Collecting Wheeled Mobile Robot 312
Hongyi Nie, Baorong Liu, Feng Yang, Guodong Cai, Xinyu Hu, Jinjie Ni and Xiaolei Hou

Machine learning algorithm based battery modeling and management method: A Cyber-Physical System perspective 317
Shuangqi Li, Hongwen He, Jianwei Li, Peng Yin and Hanxiao Wang

Intelligent Vehicle Collision Risk Modeling and Comprehensive Evaluation Method 321
Jiaxiang Qin, Weiwen Deng and Rui He

A Real-time and Parameterized Optimal Torque Distribution Strategy for 4WID Electric Vehicle without Road Adhesion Information 326
Yanjun Ren, Guodong Yin, Guangmin Li, Tian Xia, Jinhao Liang and Vincent Meyer

A Nonlinear Model Predictive Controller Design for Electronic Throttle 332
Qiyang Liu, Jiangyan Zhang and Rubo Zhang

ADRC-Based Active Front Steering Strategy for Path Tracking of A Farm Vehicle 338
Zhanmeng Lin, Xiaohong Jiao and Zhong Wang

Shift Quality Improvement of AMT by Using Torque Observer and Anti-Disturbance Controller 343
Yifan Cheng, Jinlong Hong, Guoxu Zhang, Bingzhao Gao and Hong Chen

First step to human-steering system modelling and control- Stretch reflex characteristics of driver's upper limb muscles 349
Zhang Sitao, Chu Yuan, Ji Xuewu, Yosuke Nishimura, Atsushi Ishihara and Kazuya Ando

Sensorless Vector Control of Permanent Magnet Synchronous Motor Based on DSP 355
Jiageng Peng, Nianzhong Zhang, Lin He, Qin Shi and Jijun Lu

A real-time dynamic trajectory planning for autonomous driving vehicles 359
Mingqiang Wang, Lei Zhang, Zhenpo Wang, Yinghui Sai and Yafeng Chu

Design and Optimization of the Shift Schedule and Gear Ratios for a Two-speed Pure Electric Logistics Vehicle 365
Lin He, Dong Xie, Jing Wang and Qin Shi

Frictional-electro Composite Braking System Based On Dual Brake Pedal 370
Lin He, Cheng Yao, Haohao Liu, Qin Shi and Wei Ye

Accurate Torque Control of Hybrid Engine Based on Transient Air Intake Observation 375
Li Xiaowei, Xie Hui and Chen Tao

A Multi-Cell-to-Multi-Cell Equalizer for Series-Connected Batteries Based on Flyback Conversion 381
Keke Yu, Yunlong Shang, Xiaoqian Wang, Nan Wang, Bin Duan and Chenghui Zhang

A Zero-Current-Switching Heater Based on Four-Resonant-State LC Converter for Low-Temperature Lithium-Ion Batteries of Electric Vehicles 386
Yunlong Shang, Nan Wang, Bin Duan, Qi Zhang, Keke Yu and Chenghui Zhang

Stochastic Model Predictive Control Design for Gasoline Engines with EGR 390
Weihai Jiang and Tielong Shen

GA-based Velocity Planning Using Jerk as the Encoding Method for Autonomous Vehicles 396
Jing Hou, Junwei Yu, Sanqing Qu, Fa Wang, Yang Zi and Guang Chen

Lateral Positioning Method for Unmanned Roller Compactor Based on Visual Feature Extraction 402
Yiming Sun and Hui Xie

Development and Application of Unmanned Virtual Simulation HIL Testing Platform 408
Yukuan Yang, Hui Xie and Hao Liu

Path tracking control based on Deep reinforcement learning in Autonomous driving 414
Le Jiang, Yafei Wang, Lin Wang and Jingkai Wu

Adaptive Output Voltage Tracking Control for a Fuel Cell-Boost Converter Power Supply 420
Peng Yin, Yao Wang, Hongwen He, Yushan Lin, Ying Shen and Ya-Xiong Wang

A travel classification method suitable for optimal control of electric vehicle operation 426
Meng Bumin, Da Zhang, Yaonan Wang, Xiaofang Yuan, Xing Gao and Jianhui Wang

Study on sensitivity of internal states to operating conditions within PEM fuel cell 432
Qing Wang and Liangfei Xu

Modelling of a polymer electrolyte membrane fuel cell system with anodic and cathodic internal recirculation 436
Jianhuei Zhang, Sebastian Bastek, Liangfei Xu, Jianqiu Li, Zunyan Hu, Yongzhan Wang and Minggao Ouyang