Renzong Lian

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EDUCATION

Beijing Institute of Technology **Beijing, China**

Master of Science in Mechanical Engineering Sep. 2018-Present

- Instructor: Prof. Huachun Tan (Southeast University), Prof. Hongwen He, Dr. Yuankai Wu
- Research interest: Reinforcement Learning, Transfer Learning, Hybrid Electric Vehicle, Energy Management

Fuzhou University **Fuzhou, China**

Bachelor of Engineering in Vehicle Engineering Sep. 2013-July. 2017

- Instructor: Dr. Dingqi Xue
- Bachelor thesis: The frame of racing car produced by robotic MIG welding
- Overall GPA: 2.96/5 (79.2/100), Ranking: 24/64

Awards & Honors:

- **Excellent Graduate Paper**, Fuzhou University. 2017
- **Second Prize in Cost and Manufacture Event of 2016 Formula Student China Competition**, Society of Automotive Engineers of China. 2016
- **Second Prize in Mechanical Innovation Competition of Fujian Province**, Fujian Educational Bureau. 2015

PUBLICATIONS

- **R. Lian**, J. Peng, Y. Wu, H. Tan, and H. Zhang, "Rule-interposing deep reinforcement learning based energy management strategy for power-split hybrid electric vehicle," Energy, vol. 197, p. 117297, 2020. (Code: https://github.com/lryz0612/DRL-Energy-Management)
- **R. Lian**, H. Tan, J. Peng, Q. Li, Y. Wu, "Cross-type transfer for deep reinforcement learning based hybrid electric vehicle energy management," IEEE Transactions on Vehicular Technology. (Under review)
- R. Han, **R. Lian**, H. He, X. Han, "Deep reinforcement learning based energy management strategy

for a hybrid electric tracked vehicle including lateral dynamics," Applied Energy. (Under review)

PROJECT EXPERIENCE

Multi Tensor Network Theory and Empirical Research for High Dimensional and Multi-Source Coupled Big Data **Beijing, China**

National Natural Science Foundation of China (Grant No.61620106002)

Master Student, Beijing Institute of Technology Sep. 2018-Present

Advisor: Prof. Huachun Tan, School of Transportation Engineering, Southeast University

- Research on energy management strategy of new energy vehicles based on the coupling structure of human, traffic and environmental data

Research on Energy Management Strategy of Plug-In Hybrid Electric Vehicle based on Deep Reinforcement Learning **Beijing, China**

China Postdoctoral Science Foundation (Grant No. 2016M600933)

Master Student, Beijing Institute of Technology Sep. 2018-Oct. 2019

Advisor: Dr. Jiankun Peng, School of Mechanical Engineering, Beijing Institute of Technology

- Research on the representation of multi-source and high dimensional driving cycles
- Introduced a deep reinforcement learning framework with continuous space and action representations

"Intel Cup" The First China Graduate Artificial Intelligence Innovation Competition: Intelligent energy management system of new energy vehicles **Beijing, China**

Team member, Beijing Institute of Technology May 2019-Aug. 2019

- Combined with multi-source and high-dimensional information such as traffic data and vehicle state, a stable and efficient energy management method for hybrid electric vehicles is realized.
- Transfer learning is utilized to realize the knowledge transfer between different types of hybrid electric vehicle energy management strategies and shorten the EMS development cycle.
- The feasibility and performance of continuous deep reinforcement learning is verified through the hardware-in-the-loop platform.

Formula Student China Competition **Fuzhou, China**

Team Leader, Fuzhou University Jan. 2015-Dec. 2016

Advisor: Prof. Yuhui Peng, School of Mechanical Engineering and Automation, Fuzhou University

- Designed and manufactured the frame of formula car, and realized the arrangement of chassis system
- Analyzed the mechanical characteristics of automobile components, and optimized their topology structure and parameters by finite element method

Student Research Training Program **Fuzhou, China**

Project leader, Fuzhou University May 2016-May 2017

Advisor: Dr. Dingqi Xue, School of Mechanical Engineering and Automation, Fuzhou University

- Applied robot welding technique on the manufacture of automobile components, and analyzed the mechanical properties of welding coupon.

Mechanical Innovation Competition of Fujian Province **Fuzhou, China**

Project leader, Fuzhou University Oct. 2014-May 2015

Advisor: Prof. Xiezhao Lin, School of Mechanical Engineering and Automation, Fuzhou University

- Designed an automatic unpacking and discharging device

ACADEMIC ACTIVITIES

International Conference on Applied Energy August 12-16, 2019, Västerås, Sweden

Oral Presentation

- Deep reinforcement learning based energy management of hybrid electric vehicle with expert knowledge

SKILLS

- Programming: Python
- Tools: TensorFlow, MATLAB, Sumo, Latex, AutoCAD, Solidworks, ANSYS