

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.](#) (Accepted)
- 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