Zihan Ding

Curriculum Vitae

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https://quantumiracle.github.io/webpage/

Education

Incoming– **Princeton University**, Princeton, NJ, U.S..
- **Ph.D.** in Electrical Engineering

2018.09–2019.09 **Imperial College London**, London, U.K..
- **M.Sc.** in Computing (Machine Learning Specialism) with **Distinction** degree
- Robot Learning Laboratory
- Advisor: Edward Johns

2014.09–2018.07 **University of Science and Technology of China**, Hefei, Anhui, China.
- **B.Sc.** in Photoelectric Information Science and Engineering (Physics)
- **B.Eng.** in Computer Science and Technology
- Advisor: Jinming Cui, Yunfeng Huang

Research Interests

Deep Reinforcement Learning, Robot Learning, Simulation-to-Reality, Explainable RL/ML, Optimization.

Publications

2020 Authored Book **Deep Reinforcement Learning: Foundamentals, Research and Applications**, *Hao Dong, **Zihan Ding**, Shanghang Zhang Eds.*, Springer 2020 ISBN 978-981-15-4094-3, 1st ed..
[Homepage]

2021 Preprint **CDT: Cascading Decision Trees for Explainable Reinforcement Learning**, ***Zihan Ding***, *Pablo Hernandez-Leal, Gavin Weiguang Ding, Changjian Li, Ruitong Huang*.
[Paper][Code]

2021 Preprint **RLzoo: A Comprehensive and Adaptive Reinforcement Learning Library**, ***Zihan Ding***, *Tianyang Yu, Yanhua Huang, Hongming Zhang, Luo Mai and Hao Dong*.
[Paper][Code]

2021 Preprint **Probabilistic Mixture-of-experts for Efficient Deep Reinforcement Learning**, *Jie Ren, Yewen Li, **Zihan Ding**, Wei Pan, Hao Dong*.

2021 Preprint **Bayesian Optimization for Wavefront Sensing and Error Correction**, *Zhonghua Qian, **Zihan Ding**, Mingzhong Ai, Yongxiang Zheng, Jinming Cui, Yunfeng Huang, Chuanfeng Li, Guangcan Guo.*

2021 Preprint **Improved Demand Response with Centralized Deep Multi-agent Reinforcement Learning**, *Bingchan Zhao, Jie Fu, Yunbo Wang, **Zihan Ding**, Di Wu, Romain Laroche, Chris Pal, Hao Dong.*

2021 Preprint **Sim-to-Real Transfer for Robotic Manipulation with Tactile Sensory**, ***Zihan Ding**, Ya-Yen Tsai, Wang Wei Lee, Bidan Huang.*

2021 **DROID: Minimizing the Reality Gap using Single-shot Human Demonstration**, *Ya-Yen Tsai, Hui Xu, **Zihan Ding**, Chong Zhang, Edward Johns, Jie Shao, and Bidan Huang*, IEEE Robotics and Automation Letters (RA-L) .
[Paper]

2020 **Crossing The Gap: A Deep Dive into Zero-Shot Sim-to-Real Transfer for Dynamics**, *Eugene Valassakis, **Zihan Ding** and Edward Johns*, International Conference on Intelligent Robots and Systems (IROS) 2020.
[Paper][Website][Video]

2020 **Sim-to-Real Transfer for Optical Tactile Sensing**, ***Zihan Ding**, Nathan F. Lepora and Edward Johns*, International Conference on Robotics and Automation (ICRA) 2020.
[Paper][Code][Video]

2020 **Arena: A General Evaluation Platform and Building Toolkit for Multi-Agent Intelligence**, *Yuhang Song, Jianyi Wang, Thomas Lukasiewicz, Zhenghua Xu, Mai Xu, **Zihan Ding**, and Lianlong Wu*, The Thirty-Fourth AAAI Conference on Artificial Intelligence 2020.
[Paper][Code]

2019 **Fast and High-Fidelity Readout of Single Trapped-Ion Qubit via Machine-Learning Methods**, ***Zihan Ding**, Jinming Cui, Yunfeng Huang, Chuanfeng Li, Tao Tu, Guangcan Guo*, Physical Review Applied.
[Paper][Code]

2019 **Tensor Super-Resolution with Generative Adversarial Nets: A Large Image Generation Approach**, ***Zihan Ding**, Xiao-Yang Liu, Miao Yin*, International Joint Conference on Artificial Intelligence (IJCAI), Human Brain Artificial Intelligence 2019.
[Paper][Code]

2018 **Deep Reinforcement Learning for Intelligent Transportation Systems** , *Xiao-Yang Liu, **Zihan Ding**, Sem Borst, Anwar Walid*, NeurIPS Workshop on Machine Learning for Intelligent Transportation Systems 2018.
[Paper][Code]

2018 **Accelerated Exhaustive Eye Glints Localization Method for Infrared Video Oculography**, ***Zihan Ding**, Jiayi Luo, Hongping Deng*, Proceedings of the 33rd Annual ACM Symposium on Applied Computing, SAC '18.
[Paper][Code]

Open-Source Projects

2019 **TensorLayer Reinforcement Learning Tutorials**, *main contributor*, [Repo].

2019 **RLzoo**, *main contributor*, [Repo].

Work Experiences

2021.03– **Research Intern**, inspire.ai, Beijing, China.

- Model-based Reinforcement Learning.

2020.09– 2021.03 **Research Intern**, Tencent Robotics X, Shenzhen, Guangdong, China.

- Sim-to-real Methods for Robotics Control with Tactile Sensory.

2020.02– 2020.06 **Research Intern**, Borealis AI, Toronto, ON, Canada.

- Explainable Reinforcement Learning Based on Differentiable Decision Tree.

Research Experiences

2019.09– 2020.01 **Research Intern**, Imperial College London, Robot Learning Lab, under supervision of Dr. Edward Johns.

- Sim-to-real Reinforcement Learning for Robotic Arm Control with Tactile Sensor

2017 **Undergraduate Research**, USTC, Immersive Multimedia Communication Laboratory, under supervision of Prof. Zhibo Chen.

- Competition of NeurIPS 2017: Learning to Run

2016–2018 **Undergraduate Research**, USTC, CAS Key Laboratory of Quantum Information, under supervision of Dr. Jinming Cui and Prof. Yunfeng Huang.

- Machine Learning assisted Qubit Readout in Trap-ion System.

Honors & Awards

2018 **Best Undergraduate Thesis Award at USTC 2018**, **top 2** in the major.

2017 **NeurIPS 2017: Learning to Run Competition**, $\mathbf{4^{th}/479}$.

2016 **DJI RoboMaster AI Challenge 2016**, $\mathbf{3^{rd}/40}$.

Academic Services

- NeurIPS 2020 Quantum Tensor Networks in Machine Learning Workshop: Reviewer
- NeurIPS 2019 Autonomous Driving Workshop: Reviewer, PC Member
- IEEE Access: Reviewer

Skills

- **Languages**
  Python, C++, C#, Prolog

- **Frameworks**
  PyTorch, TensorFlow (v1.&v2.), TensorLayer
- **Tools**
  git, LaTeX, ROS, MuJoCo, Unity3D, PyRep, SolidWorks, AutoCAD, Mathematics, MATLAB, OpenCV