Peide Huang

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EDUCATION

Carnegie Mellon University 05/15/2020 - 12/18/2024
Ph.D. in Mechanical Engineering (SafeAI Lab)
M.S. in Machine Learning *Pittsburgh, PA, US*

Stanford University 09/24/2018 - 04/02/2020
M.S. in Mechanical Engineering (Robotics and Control), GPA: 3.9/4.0 *Stanford, CA, US*

Nanyang Technological University, Singapore 08/15/2014 - 06/14/2018
B.E. in Aerospace Engineering with Highest Distinction, GPA: 4.9/5.0 *Singapore*

WORK EXPERIENCE

Apple 05/28/2024 - Now
Research Scientist, Robotics/ML *One Apple Park Way, Cupertino, CA, US*

Bosch Center for Artificial Intelligence 05/15/2023 - 08/25/2023
Machine Learning Research Intern *2555 Smallman St, Pittsburgh, PA, US*

Flexiv Robotics Ltd. 06/17/2019 - 09/20/2019
System Engineer Intern *4500 Great America Pkwy Ste 210, Santa Clara, CA, US*

Agency for Science, Technology and Research, Singapore 01/15/2017 - 06/15/2017
Research Intern *2 Fusionopolis Way, Singapore*

SELECTED PUBLICATIONS

* indicates equal contribution.

1. **EgoDex: Learning Dexterous Manipulation from Large-Scale Egocentric Video**
Ryan Hoque*, **Peide Huang***, David J. Yoon*, Mouli Sivapurapu, Jian Zhang
Preprint (Best Paper Award at RSS2025 EgoAct Workshop)

2. **ELEGNT: Expressive and Functional Movement Design for Non-anthropomorphic Robot**
Yuhan Hu, **Peide Huang**, Mouli Sivapurapu, Jian Zhang.
Preprint

3. **EMOTION: Expressive Motion Sequence Generation for Humanoid Robots with In-Context Learning**
Peide Huang, Yuhan Hu, Nataliya Nechyporenko, Daehwa Kim, Walter Talbott, Jian Zhang.
IEEE Robotics and Automation Letters (RA-L)

4. **CaDRE: Controllable and Diverse Generation of Safety-Critical Driving Scenarios using Real-World Trajectories**
Peide Huang, Wenhao Ding, Jonathan Francis, Bingqing Chen, Ding Zhao.
2025 IEEE International Conference on Robotics and Automation (ICRA 2025)

5. **Dynamics as Prompts: In-Context Learning for Sim-to-Real System Identifications**
Xilun Zhang*, Shiqi Liu*, **Peide Huang**, William Jongwon Han, Yiqi Lyu, Mengdi Xu, Ding Zhao.
IEEE Robotics and Automation Letters (RA-L)

6. **Gradient Shaping for Multi-Constraint Safe Reinforcement Learning**
Yihang Yao, Zuxin Liu, Zhepeng Cen, **Peide Huang**, Tingnan Zhang, Wenhao Yu, Ding Zhao.
6th Annual Learning for Dynamics & Control Conference (L4DC 2024)

7. **Creative Robot Tool Use with Large Language Models**
   Mengdi Xu*, **Peide Huang***, Wenhao Yu*, Shiqi Liu, Xilun Zhang, Yaru Niu, Tingnan Zhang, Fei Xia, Jie Tan, Ding Zhao.
   Preprint

8. **What Went Wrong? Closing the Sim-to-Real Gap via Differentiable Causal Discovery**
   Peide Huang, Xilun Zhang*, Ziang Cao*, Shiqi Liu*, Mengdi Xu, Wenhao Ding, Jonathan Francis, Bingqing Chen, Ding Zhao
   7th Conference on Robot Learning (CoRL 2023)

9. **Continual Vision-based Reinforcement Learning with Group Symmetries**
   Shiqi Liu*, Mengdi Xu*, **Peide Huang**, Yongkang Liu, Kentaro Oguchi, Ding Zhao
   7th Conference on Robot Learning (CoRL 2023) (Oral, 6.6%)

10. **Group Distributionally Robust Reinforcement Learning with Hierarchical Latent Variables**
    Mengdi Xu, **Peide Huang**, Yaru Niu, Visak Kumar, Jielin Qiu, Chao Fang, Kuan-Hui Lee, Xuewei Qi, Henry Lam, Bo Li, Ding Zhao.
    The 26th International Conference on Artificial Intelligence and Statistics (AISTATS 2023)

11. **Curriculum Reinforcement Learning using Optimal Transport via Gradual Domain Adaptation**
    Peide Huang, Mengdi Xu, Jiacheng Zhu, Laixi Shi, Fei Fang, Ding Zhao.
    The 36th Conference on Neural Information Processing Systems (NeurIPS 2022)

12. **Robust Reinforcement Learning as a Stackelberg Game via Adaptively-Regularized Adversarial Training**
    Peide Huang, Mengdi Xu, Fei Fang, Ding Zhao.
    The 31st International Joint Conference on Artificial Intelligence (IJCAI 2022).

13. **Scalable Safety-Critical Policy Evaluation with Accelerated Rare Event Sampling**
    Mengdi Xu, **Peide Huang**, Fengpei Li, Jiacheng Zhu, Xuewei Qi, Kentaro Oguchi, Zhiyuan Huang, Henry Lam, and Ding Zhao.
    IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2022).

14. **Cardiac Disease Diagnosis on Imbalanced Electrocardiography Data Through Optimal Transport Augmentation**
    Jielin Qiu, Jiacheng Zhu, Mengdi Xu, **Peide Huang**, Michael Rosenberg, Douglas Weber, Emerson Liu, Ding Zhao
    2023 IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP 2023)

15. **Trustworthy Reinforcement Learning Against Intrinsic Vulnerabilities: Robustness, Safety, and Generalizability**
    Peide Huang*, Mengdi Xu*, Zuxin Liu*, Wenhao Ding, Zhepeng Cen, Bo Li, Ding Zhao.
    Preprint

16. **Multimodal Representation Learning of Cardiovascular Magnetic Resonance Imaging**
    Jielin Qiu*, **Peide Huang***, Makiya Nakashima, Jaehyun Lee, Jiacheng Zhu, Wilson Tang, Pohao Chen, Christopher Nguyen, Byung-Hak Kim, Debbie Kwon, Douglas Weber, Ding Zhao, David Chen.
    Preprint

AWARDS AND HONORS

- CMU Machine Learning Department Fellowship 2023-2024
- NeurIPS 2022 Scholar Award
- NeurIPS 2022 Top Reviewer (8% of all reviewers)

- NTU 2016 President Research Scholar with Distinction

SERVICES

Conference Reviewer	NeurIPS, ICML, ICLR, CoRL, RLC, AISTATS, RLC, ICASSP, CVPR
Journal Reviewer	TPAMI, IJCV

TEACHING AND LEADERSHIP EXPERIENCE

CMU Modern Control Theory, Fall 2021	Head of teaching assistants
CMU Linear Control Systems, Fall 2020	Head of teaching assistants
NTU Introduction to Computing, Spring 2016	Peer tutor
NTU Robotics Club	Co-founder and Vice President