# WENHAO DING

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## EDUCATION

**Carnegie Mellon University, Pittsburgh, USA** *Aug 2019 - May 2024 (Expected)*
*Ph.D. Mechanical Engineering*

**Carnegie Mellon University, Pittsburgh, USA** *Jan 2021 - Dec 2022 (Expected)*
*M.S. Machine Leaning*
Curriculum: Advanced Machine Learning, Deep Reinforcement Learning, Graduate Artificial Intelligence, etc

**Tsinghua University, Beijing, China** *Aug 2014 - July 2018*
*B.Eng. Electronic Engineering*

## RESEARCH INTERESTS

**Deep Generative Models:** Generating safety-critical scenarios for robust robot development.
**Adversarial Machine Learning:** Improving robustness by training against semantic adversarial examples.
**Causal Reinforcement Learning:** Making generalizable decisions by discovering the underlying causality.

## ACADEMIC SERVICES

**Conference Reviewer:** ICML 2022, ICLR 2022-2023, NeurIPS 2021-2022 (top reviewer), CVPR 2022, ICCV 2021, ECCV 2022, ICRA 2020-2022, IROS 2020-2021, ICME 2020-2022
**Journal Reviewer:** TMLR, IEEE RA-L, IEEE Access, IEEE T-ITS, IEEE TII, IEEE MM

## HONORS & AWARDS

2022 - Qualcomm Innovation Fellowship Winner, North America
2022 - NeurIPS Scholar Award
2019 - CMU Graduate Student Assembly/Provost Conference Funds
2018 - Tsinghua University Outstanding Undergraduate Thesis Award
2017 - 34th Tsinghua University Academic Challenge Cup (*Second prize*)
2016 - Fellowship of Spark Talents Program (*50 recipients in Tsinghua*)
2016 - Tsinghua University Technology Innovation Excellence Award

## PUBLICATION

**Generalizing Goal-Conditioned Reinforcement Learning with Variational Causal Reasoning**
***Wenhao Ding**, Haohong Lin, Bo Li, Ding Zhao*
Conference on Neural Information Processing Systems (NeurIPS) 2022

**SafeBench: A Benchmarking Platform for Safety Evaluation of Autonomous Vehicles**
**Chejian Xu, **Wenhao Ding, Weijie Lyu, Zuxin Liu, Shuai Wang, Yihan He, Hanjiang Hu, Ding Zhao, Bo Li*
Conference on Neural Information Processing Systems (NeurIPS) 2022

**CausalAF: Causal Autoregressive Flow for Goal-Directed Safety-Critical Scenes Generation**
***Wenhao Ding**, Haohong Lin, Bo Li, Ding Zhao*
Conference on Robot Learning (CoRL) 2022

**A Survey on Safety-critical Scenario Generation for Autonomous Driving – A Methodological Perspective**
***Wenhao Ding**, Chejian Xu, Haohong Lin, Bo Li, Ding Zhao*
Preprint arXiv:2202.02215

**Learning to View: Decision Transformers for Active Object Detection**
***Wenhao Ding**, Nathalie Majcherczyk, Mohit Deshpande, Xuewei Qi, Ding Zhao, Rajasimman Madhivanan, Arnie Sen*
Submitted to ICRA 2023.

**Trustworthy Reinforcement Learning Against Intrinsic Vulnerabilities: Robustness, Safety, and Generalizability**
**Mengdi Xu, *Zuxin Liu, *Peide Huang, **Wenhao Ding**, Zhepeng Cen, Bo Li, Ding Zhao*
Preprint arXiv:2209.08025

**Semantically Controllable Scene Generation with Guidance of Explicit Knowledge**
***Wenhao Ding**, Bo Li, Kim Ji Eun, Ding Zhao*
Preprint arXiv:2106.04066

**Certifiable Deep Importance Sampling for Rare-Event Simulation of Black-Box Systems**
*Mansur Arief, Yuanlu Bai, **Wenhao Ding**, Shengyi He, Zhiyuan Huang, Henry Lam, Ding Zhao*
Preprint arXiv:2111.02204

**Multimodal Safety-Critical Scenarios Generation for Decision-Making Algorithms Evaluation**
***Wenhao Ding**, Baimimng Chen, Bo Li, Kim Ji Eun, Ding Zhao*
IEEE Robotics and Automation Letters (RA-L)

**Context-Aware Safe Reinforcement Learning for Non-Stationary Environments**
*Baiming Chen, Zuxin Liu, Jiacheng Zhu, Mengdi Xu, **Wenhao Ding**, Liang Li, Ding Zhao*
IEEE International Conference on Robotics and Automation (ICRA) 2021

**Task-Agnostic Online Reinforcement Learning with an Infinite Mixture of Gaussian Processes**
*Mengdi Xu, **Wenhao Ding**, Jiacheng Zhu, Zuxin Liu, Baiming Chen, Ding Zhao*
Neural Information Processing Systems (NeurIPS) 2020

**Deep Probabilistic Accelerated Evaluation: A Certifiable Rare-Event Simulation Methodology for Black-Box Autonomy**
*Mansur Arief*, Zhiyuan Huang*, Guru Kumar, Yuanlu Bai, **Wenhao Ding**, Henry Lam, Ding Zhao*
Artificial Intelligence and Statistics (AISTATS) 2021

**Learning to Collide: An Adaptive Safety-Critical Scenarios Generating Method**
***Wenhao Ding**, Baiming Chen, Minjun Xu and Ding Zhao*
IEEE International Conference on Intelligent Robots and Systems (IROS) 2020

**Adaptive Multi-scale Detection of Acoustic Events**
***Wenhao Ding** and Liang He*
IEEE/ACM Transactions on Audio, Speech, and Language Processing (T-ASLP)

**CMTS: Conditional Multiple Trajectory Synthesizer for Generating Safety-critical Driving Scenarios**
***Wenhao Ding**, Mengdi Xu and Ding Zhao*
IEEE International Conference on Robotics and Automation (ICRA) 2020

**A New Multi-vehicle Trajectory Generator to Simulate Vehicle-to-Vehicle Encounters**
***Wenhao Ding**, Wenshuo Wang and Ding Zhao*
IEEE International Conference on Robotics and Automation (ICRA) 2019

**Prior Knowledge-based Regularization for Sound Event Localization and Detection**
***Wenhao Ding***, Jingyang Zhang* and Liang He*
Detection and Classification of Acoustic Scenes and Events Challenge 2019 (Task 3)

**Multi-Scale Time-Frequency Attention for Acoustic Event Detection**

*Jingyang Zhang,* ***Wenhao Ding****, Jintao Kang and Liang He*
Interspeech 2019

**MTGAN: Speaker Verification through Multitasking Triplet Generative Adversarial Networks**
***Wenhao Ding*** *and Liang He*
Interspeech 2018

**Hierarchical Reinforcement Learning Framework towards Multi-agent Navigation**
***Wenhao Ding****, Shuaijun Li and Huihuan Qian*
IEEE International Conference on Robotics and Biomimetics (ROBIO) 2018

**Vehicle Pose and Shape Estimation through Multiple Monocular Vision**
***Wenhao Ding****, Shuaijun Li, Guilin Zhang, Xiangyu Lei and Huihuan Qian*
IEEE International Conference on Robotics and Biomimetics (ROBIO) 2018

## WORK EXPERIENCE

**Amazon Lab126, Sunnyvale, CA, USA** *May 2022 - Aug 2022*
*Applied Scientist Intern*

**Bosch Center for Artificial Intelligence, Pittsburgh, PA, USA** *May 2021 - Aug 2021*
*Machine Learning Research Intern*

**Tsinghua University, Beijing, China** *July 2018 - Aug 2019*
*Research Engineer*

**HongKong University of Science and Technology, HongKong, China** *Jan 2018 - Mar 2018*
*Research Assitant*

**Chinese University of HongKong, HongKong, China** *July 2017 - Sep 2017*
*Research Assitant*