TAO ZHONG

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EDUCATION

University of Toronto *09/2018 - 05/2023(Expected)*
Degree: B.A.Sc. in Engineering Science ***Major GPA***: 3.97/4.0 ***cGPA***: 3.84/4.0
Major: Robotics Engineering ***Minor***: Artificial Intelligence

Hong Kong University of Science and Technology *06/2019 - 08/2019*
HKUST International Summer Exchange Program

PUBLICATIONS

1. Dylan Turpin, **Tao Zhong**, Shutong Zhang, Guanglei Zhu, Eric Heiden, Miles Macklin, Stavros Tsogkas, Sven Dickinson, Animesh Garg. DexGrasp-1M: Dexterous Multi-finger Grasp Generation Through Differentiable Simulation. Accepted to *IEEE International Conference on Robotics and Automation (ICRA), 2023*.
2. **Tao Zhong***, Zhixiang Chi*, Li Gu*, Yang Wang, Yuanhao Yu, Jin Tang. Meta-DMoE: Adapting to Domain Shift by Meta-Distillation from Mixture-of-Experts. *Advances in Neural Information Processing Systems (NeurIPS), 2022*.

EXPERIENCE

People, AI, & Robots Lab, University of Toronto *03/2022 - Present*
Undergraduate Research Student, Advisor: Prof. Animesh Garg
Differentiable Grasp Synthesis for Dexterous Hands
• Participated in the research of gradient-based optimization methods for grasp synthesis using differentiable simulation.
• Built a large-scale multi-finger robotic grasping dataset that contains one million training examples for three robotic hands with multi-modal visual inputs.
• Co-authored paper, *DexGrasp-1M: Dexterous Multi-finger Grasp Generation Through Differentiable Simulation*, accepted to ICRA 2023.

Noah's Ark Lab, Huawei Technologies Canada *05/2021 - 05/2022*
Machine Learning Research Engineer, Advisor: Prof. Yang Wang
Domain Adaptive Knowledge Distillation from Mixture-of-Experts
• Proposed a novel framework for unsupervised test-time adaptation formulated as a multi-teacher knowledge distillation process to address domain shift problems.
• Outperformed previous state-of-the-art by a sizable margin in several challenging domain shift benchmarks.
• First-authored paper, *Meta-DMoE: Adapting to Domain Shift by Meta-Distillation from Mixture-of-Experts*, accepted to NeurIPS 2022.

Meta-Learned Online Recommender for Cold-Start Recommendation
• Applied state-of-the-art machine learning solutions to online apps recommender system.
• Implemented a novel algorithm for online cold-start recommendation by leveraging the strength of both Model-Agnostic Meta-Learning and online optimization techniques.
• Outperformed other meta-learned recommenders systems significantly in cold-start scenarios.

aUToronto — The University of Toronto Self-Driving Car Team *08/2020 - 08/2022*
Mapping & Localization Team Lead
Team Advisors: Prof. Tim Barfoot, Prof. Steven Waslander, Prof. Angela Schoellig, Prof. Jonathan Kelly
• Led a team of 15 students developing state-of-the-art mapping and localization solutions for L4 autonomous vehicles.
• Built and optimized the semantic maps of test areas and competition tracks for vehicles using our self-built automated mapping pipeline in Python as well as mapping software such as JOSM, QGIS.
• Developed localization algorithms by leveraging HD/Lidar map and sensors input using Python, C++, and ROS.
• Won the SAE Autodrive Challenge for three consecutive years as a team.

Shenzhen Institute of Artificial Intelligence and Robotics for Society, CUHK(SZ) *05/2020 - 09/2020*
Research Assistant, Advisor: Prof. Huihuan Qian

Sailboat Test Arena

• Designed a web-based sailboat testing arena platform to streamline and automate the testing process using Javascript, PHP, HTML/CSS.

• Implemented features including low-latency remote control with Bluetooth communication, customized environment configuration, real-time video streaming via webRTC, route planning and cruise control algorithms into the platform.

• Developed a pipeline to filter and feed desired data collected from Optitrack motion capture tool API to MySQL database using Python and NumPy.

AWARDS & HONORS

NeurIPS 2022 Scholar Award *2022*

SAE Autodrive Challenge: 1st Place Winner (As a team) *2020, 2021, 2022*

Dean's Honours List (All 7 terms) *2018 - 2023*

SKILLS

Programming Languages: Python, C/C++, MATLAB/Simulink, SQL, Verilog, ARM Assembly

Libraries & Tools: PyTorch, NumPy, OpenCV, scikit-learn, ROS, Git, LaTeX