LAN FENG

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EDUCATION

M.S. in Robotics, System and Control, ETH Zurich — Expected 2023
Relevant Coursework: Probabilistic Artificial Intelligence, Perception and Learning for Robotics, Computational Models of Motion

B.E. in Navigation Engineering, Wuhan University — 2016 - 2020
National Scholarship
Graduated with College Honors
Overall GPA: 3.88 / 4.00
Ranking: 2 / 50

RESEARCH EXPERIENCE

Controllable Human Grasp Generation — Mar 2022 - Sep 2022
Semester Project (supervisor: Otmar Hilliges) — *Advanced Interactive Technologies, ETH*

- Proposed a new task: given an object's point cloud and a control signal, generate corresponding grasp pose.
- Designed a query-key mechanism between control signal and object point cloud to improve grasp performance.

TrafficGen: Learning to Generate Traffic Scenarios (supervisor: Bolei Zhou) — Nov 2021 - Sep 2022
Remote Research — *Multimedia Lab, CUHK*

- Created a auto-regresive pipeline that can generate real-world traffic scenarios.
- The generated traffic flows can be used to improve RL agents' generalizability and test self-driving system.
- ICRA23 under review; Project Webpage: https://metadriverse.github.io/trafficgen/

MetaDrive: Composing Diverse Driving Scenarios (supervisor: Bolei Zhou) — Oct 2021 - Mar 2022
Remote Research — *Multimedia Lab, CUHK*

- Contributed to transfer real-world driving scenarios to the simulator.
- Contributed to multi-agent generalizability experiment.

Unsupervised Representations for Reinforcement Learning of Robot Navigation — Mar 2022 - Jul 2022
Course Project — *Autonomous Systems Lab, ETH*

- Purpose: better representations lead to better performance for an RL agent.
- Designed a transformer-based encoder-decoder model to do unsupervised learning.
- The learned representations improve robot navigation performance by 20% compare to CNN world model.

Waymo Open Dataset Challenge (supervisor: Bolei Zhou) — Mar 2021 - Jul 2021
Motion Prediction track and Interaction Prediction track — *SenseTime*

- Purpose: predicting the positions of up to 8 traffic participants for 8 seconds into the future.
- Proposed scene-context and interaction-context modeling to enhance multi-agent motion prediction performance.
- Designed a velocity-based NMS method to improve the quality of prediction proposals.
- Ranked 3rd and 1st on two tracks respectively; Award $2,000 and $ 15,000; Invited to CVPR workshop 2021.

WORK EXPERIENCE

SenseTime — Nov 2020 - Mar 2021
Research Internship (supervisor: Chunxiao Liu) — *Shenzhen, China*

- Developed an RL self-driving simulation platform based on SUMO and RLlib.

- Decreased RL vehicles' collision rate by 80% by introducing safe RL algorithm and attention policy network.
- Deployed the simulator for self-driving test.

PUBLICATIONS

1. **Lan Feng***, Quanyi Li*, Zhenghao Peng*, Shuhan Liu, Bolei Zhou. TrafficGen: Learning to Generate Diverse and Realistic Traffic Scenarios, IEEE International Conference on Robotics and Automation (**ICRA 2023, under review**)
2. **Lan Feng**, Sammy Christen, Jie Song. Controllable Human Grasp Generation. European Conference on Computer Vision (**ECCV 2022 workshop**)
3. Quanyi Li*, Zhenghao Peng*, **Lan Feng**, Zhenghai Xue, Qihang Zhang, Bolei Zhou. MetaDrive: Composing Diverse Driving Scenarios for Generalizable Reinforcement Learning. IEEE transactions on pattern analysis and machine intelligence (**TPAMI 2022**)
4. Quanyi Li, Zhenghao Peng, Haibin Wu, **Lan Feng**, Bolei Zhou. Human-AI Shared Control via Frequency-based Policy Dissection. Advances in Neural Information Processing Systems (**NeurIPS2022**)

(* indicates joint first authors)

TECHNICAL SKILLS

Programming	Python, C++, C#, RLlib, Tensorflow, Pytorch, trimesh
Development Tools	Mujoco, OpenAI gym, Git
Language Certificate	GRE 334 (164+170), IELTS 7.5