ZANMING HUANG

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EDUCATION

Boston University Boston, MA, United States
M.S. in Electrical and Computer Engineering *Jan 2023*
Relevant Courseworks: Deep Learning, Machine Learning, Adv. Data Structures, Optimization

University of Hong Kong Pok Fu Lam, Hong Kong
B.S. in Decision Analytics, Minor in Mathematics *Jun 2018*
Relevant Courseworks: Big Data Analytics, Data Mining, Probability and Statistics

PUBLICATION

- **Zanming Huang***, Zhongkai Shangguan*, Jimuyang Zhang, Gilad Bar, Matthew Boyd, Eshed Ohn-Bar. *ASSISTER: Assistive Navigation via Conditional Instruction Generation*. European Conference on Computer Vision (ECCV), 2022
- Jimuyang Zhang, **Zanming Huang**, Eshed Ohn-Bar. *Coaching a Teachable Student*. Conference on Computer Vision and Pattern Recognition (CVPR), 2023 ***(Highlight, Top 2.5%)***
- Jimuyang Zhang, **Zanming Huang**, Arijit Ray, Eshed Ohn-Bar. *Language-based Driving Models*. Under Review for Conference on Computer Vision and Pattern Recognition (CVPR), 2024
- **Zanming Huang**, Jimuyang Zhang, Eshed Ohn-Bar. *Emergent 3D Representations for Autonomous Driving*. In Preparation.

RESEARCH EXPERIENCE

Boston University Boston, MA, United States
Research Assistant *Oct 2021 to Present*

Self-supervised 3D Perception and Feature Learning

- Learning spatial representations given image by leveraging spatialtemporal consistency through **self-supervision**.
- Proposed a pipeline for predicting birds-eye-view (BEV) semantic map using raw sensor outputs, bypassing the need for manual segmentation annotations.

Vision-based Sensorimotor Policy Learning

- Proposed a method for learning robust **end-to-end autonomous driving** policies with **imitation learning** using **simulation** (e.g., CARLA) and real-world (e.g., nuScenes) data.
- Designed a deep teacher-student **distillation** framework to more effectively train a vision only driving agent, achieving state-of-the-art performance on closed-loop CARLA benchmarks.

Sensorimotor Policy Learning with Large Language Models

- Researched on end-to-end sensorimotor agent using multimodal **large language model** (LLM).
- Improving traning robustness and agent preformance through failure feedback guidance.
- Agent with feedback guidance achieved state-of-the-art in both open-loop and closed-loop driving evaluations.

Human Motion Modeling

- Researched on **reinforcement learning** based methods for learning organic navigation strategies and generating naturalistic human motions, utilizing robot learning environments such as Isaac Sim.

Vision-and-Language Navigation

- Developed a goal-driven **vision-and-language navigation** model leveraging **transformer** architectures for intelligent mobile systems. Method outperformed previous state-of-the-art in both open-loop and closed-loop evaluations.

PROFESSIONAL EXPERIENCE

Cidi.ai Hong Kong | Changsha, China
Algorithm Engineer *Jul 2018 – May 2021*

Autonomous Vehicle Algorithm Research, Design, and Implementation

- Implemented various optimal control, model predictive control, loop-shaping, bumpless control, and robust control strategies to improve vehicle control performance and robustness on highways and urban settings.
- Designed a robust target selection method and trajectory estimation algorithm for level-2 autonomous vehicles.
- Developed machine and deep learning models for vehicle action prediction algorithm based on radar, camera, LiDAR, and vehicular sensors.

ADDITIONAL ACTIVITY

- Reviewer for CVPR (2024)
- Reviewer for RA-L (2024)
- Volunteer for AVA: Accessibility, Vision, and Autonomy workshop at CVPR (2022, 2023)

SKILL

- *Programming*: Python, C/C++, PyTorch, TensorFlow, MATLAB/Simulink, R, SQL, CUDA, LaTeX, ROS.
- *Software*: Linux, UNIX, Unreal, CARLA, Unity, Isaac Sim/Gym, Git.
- *Languages*: Fluent in English, Mandarin, and Cantonese.