Zanming Huang

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EDUCATION

Boston University Boston, MA, United States
M.S. in Electrical and Computer Engineering | GPA: 3.88/4.0 *Expected Jan 2023*
Relevant Coursework: 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 Coursework: 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

RESEARCH EXPERIENCE

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

Vision-and-Language Navigation

- Developed a novel goal-driven vision-and-language navigation model leveraging transformer architectures for intelligent mobile systems.
- Designed and developed an interactive simulation experiment involving real test volunteers for vision-and-language navigation model evaluation.

Autonomous Driving Policy Learning ***(1 paper under review)***

- Researched on a novel method for learning robust end-to-end autonomous navigation policies in simulation (e.g., CARLA) and real-world (e.g., NuScenes) data.
- Designed a coaching algorithm to more effectively train a camera only driving agent through imitation learning, achieving state-of-the-art performance on CARLA leaderboard.

Realistic Human Motion Modeling

- Researched reinforcement learning based methods for discovering organic movement strategies and generating naturalistic human motion by leveraging robot learning simulations (e.g., Isaac Sim).
- Designed data-driven methods for generating realistic scenarios by leveraging real and simulation data.

Assistive Intelligence for the Blind and Visually Impaired (BVI)

- Created a large-scale simulation dataset with disabled pedestrians in complex urban environments for inclusive computer vision tasks.
- Developed wearable AI-powered assistance system that helped BVI to navigate outdoor open environments.

Keypoint Detection Under Partial Visibility ***(1 paper under review)***

- Introduced a large-scale simulated vehicle keypoint dataset in dense urban scenarios with fine-grained keypoint annotation including partially visible instances. Analysed performance of state-of-the-art methods on the dataset.

PROFESSIONAL EXPERIENCE

Cidi.ai Changsha, Hunan, 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 for enhanced vehicle control on highways and urban settings.
- Researched optimization and Neural Network-based system identification methods for vehicle model parameter estimation.
- Designed a robust target selection method and trajectory estimation algorithm for level-2 autonomous vehicles.
- Developed a Hidden Markov Model (HMM) vehicle intention prediction algorithm based on radar, camera, LiDAR, and vehicular sensors.

Simulation Tool Design and Implementation

- Built simulation tools for control algorithm testing using Simulink, TruckSim, and ROS.
- Developed test automation tools with efficient pipelines for data processing, visualization, and model validation.

SKILL

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