# Zanming Huang

huangtom@bu.edu | +1 (617)-820-9538 | github.com/tzmhuang | linkedin.com/in/tzmhuang

## EDUCATION

**Boston University** Boston, MA, United States
*M.S. in Electrical and Computer Engineering | GPA: 3.83/4.0* *Expected Jan 2023*
Relevant Coursework: Deep Learning, Machine Learning, Data Structures, High Performance Programming

**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, Optimization

## 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*

- Developed a novel goal-driven vision-and-language navigation model leveraging transformer architectures for intelligent mobile systems (first author paper accepted to the European Conference on Computer Vision, 2022).
- Benchmarked various imitation learning algorithms for generating natural speech in human-robot interaction.
- Proposed novel geometry-based approach for learning robust end-to-end autonomous navigation policies in simulation (e.g., CARLA) and real-world (e.g., NuScenes) data.
- Designed data-driven methods for generating realistic scenarios in robot learning simulations (Unreal Engine 4).

## PROJECTS

**Comparison of Priority Heaps for Dijkstra's Shortest Path Algorithm** *Mar 2022 – Jun 2022*
*Boston University*

- Implemented Dijkstra's algorithm with Fibonacci Heap, Rank Paring Heap and Violation Heap using C++.
- Tested Dijkstra's algotithm with the three priority heaps on generated graphs to ensure correctness and performed runtime analysis.

**Attention Based Machine Translation and Quality Estimation** *Mar 2022 – Jun 2022*
*Boston University*

- Implemented an encoder-decoder transformer model in Python on language-to-language translation tasks on WMT and Multi30K datasets.
- Optimized the model architecture (layer parameters), added a quality estimation task, and integrated a learning-based self-attention positional encoding.

## 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 autonomy 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, Git, LaTeX.
- *Languages*: Fluent in English, Mandarin and Cantonese.