

ZHE HUANG

1308 W Main St, Urbana, IL 61801 | zheh4@illinois.edu | 650-334-9748 | <https://tedhuang96.github.io/>

EDUCATION BACKGROUND

09/2019–06/2024 (Expected)	University of Illinois at Urbana-Champaign <i>Ph.D.</i> in Electrical and Computer Engineering
09/2017–06/2019	Stanford University <i>M.S.</i> in Mechanical Engineering
09/2013–07/2017	Xi'an Jiaotong University <i>B.Eng.</i> in Energy and Power Engineering, Honors Engineering Program

Coursework: Robotics, Machine Learning, Computer Vision, Convex Optimization, Random Processes, Control System Theory & Design, Optimal Control, Reinforcement Learning, Probabilistic Graphical Models, Statistical Learning Theory.

Skills: Python, Robot Operating System (ROS), PyTorch, MATLAB, LaTeX.

PROFESSIONAL EXPERIENCES

Pedestrian Trajectory Prediction

07/19-Now

Human-Centered Autonomy Lab

Position: Research Assistant

University of Illinois at Urbana-Champaign

Advisor: Prof. Katherine Driggs-Campbell

- Presented a novel framework that incorporates particle filtering and Long-Short Term Memory (LSTM) Networks, to simultaneously estimate pedestrian intentions and generate multi-modal long-term trajectory prediction with a flexible sampling strategy. Deployed the trajectory prediction algorithm on an autonomous vehicle via ROS.
- Proposed an end-to-end Transformer-based approach to perform sparse interaction graph structure learning and trajectory prediction for crowds walking in public scenes.

Collaborative Manufacturing

07/20-Now

Human-Centered Autonomy Lab

Position: Research Assistant

University of Illinois at Urbana-Champaign

Advisor: Prof. Katherine Driggs-Campbell

- Developed vision-based safety algorithms for human-robot collaboration in manufacturing settings by applying camera-based human skeleton tracking algorithms. Wrote a ROS interface across machines for data collection of multi-agent collaboration tasks.
- Created contact detection algorithms for human-robot interaction in a shared workspace using joint torque sensors. Implemented admittance control with the wrist force torque sensor.

Intelligence on the Cloud and at the Edge

04/19-06/19

Big Data and IoT Team,

Position: Digital Technology Intern

Schlumberger Software Technology & Innovation Center

Advisors: Bernard Van Haecke, Crispin Chatar

- Cloud-wise: Developed Drake the Driller, i.e. a voice interface for drilling systems, based on a Dialogflow NLP agent and Google Cloud services. Demonstrated Drake the Driller on a drilling rig model running in the real world. Our publication received the highest rating in the innovative technologies session.
- Edge-wise: Trained decision tree models on a machine learning chip integrated with accelerometer and gyroscope for drilling pattern recognition and fault diagnosis.

PUBLICATIONS

- Huang, Z.**, Li, R., Shin, K., & Driggs-Campbell, K. (2021). Learning Sparse Interaction Graphs of Partially Observed Pedestrians for Trajectory Prediction. arXiv preprint arXiv:2107.07056. Accepted by IEEE Robotics and Automation Letters.
- Huang, Z.**, Hasan, A., Shin, K., Li, R., & Driggs-Campbell, K. (2021). Long-Term Pedestrian Trajectory Prediction Using Mutable Intention Filter and Warp LSTM. IEEE Robotics and Automation Letters, 6(2), 542-549.
- Gan, L. T., Blumenschein, L. H., **Huang, Z.**, Okamura, A. M., Hawkes, E. W., & Fan, J. A. (2020). 3D Electromagnetic Reconfiguration Enabled by Soft Continuum Robots. IEEE Robotics and Automation Letters, 5(2), 1704-1711.
- Chatar, C., **Huang, Z.**, & Hadrovic, P. (2020). A Voice Interface for Drilling Systems. In IADC/SPE International Drilling Conference and Exhibition. Society of Petroleum Engineers.
- Du, P., **Huang, Z.**, Liu, T., Xu, K., Gao, Q., Sibai, H., Driggs-Campbell, K., & Mitra, S. (2019). Online Monitoring for Safe Pedestrian-Vehicle Interactions. IEEE International Conference on Intelligent Transportation Systems.