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**
Ph.D. in Electrical and Computer Engineering

09/2017—06/2019 **Stanford University**
M.S. in Mechanical Engineering

09/2013—07/2017 **Xi'an Jiaotong University**
B.Eng. in Energy and Power Engineering, Honors Engineering Program

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

PROFESSIONAL EXPERIENCES

Amazon Robotics, North Reading, MA **08/22-12/22**

Advanced Robotics Research Co-op

- Developed a learning-based instance-wise multi-modal grasp policy algorithm using RGB images and point cloud as input for picking Amazon Fresh groceries with a hybrid gripper, and initiated the patent application process.

Nuro, Mountain View, CA **05/22-08/22**

PhD Intern

- Developed causal reasoning metrics in terms of trajectory prediction and evaluated the metrics on scene sets of interactive agents.

Human-Centered Autonomy Lab, Urbana, IL **07/19-Now**

Research Assistant

- Created a robust human intention estimation architecture for human-robot collaboration in free-form industrial assembly tasks, where human trajectory prediction is integrated into robot motion planning by estimating human intention in real-time, to boost collaboration efficiency under safety monitoring.
- 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.
- Introduced an end-to-end Transformer-based approach which recognizes multi-agent interaction patterns by inferring sparse interaction graphs, and performs trajectory prediction for crowds in public scenes. The effectiveness is demonstrated in addressing freezing robot problems and minimizing disturbances from unimportant neighbors.

Schlumberger Software Technology & Innovation Center, Menlo Park, CA **04/19-06/19**

Digital Technology Intern

- Cloud-wise: Developed a voice interface for drilling systems using a Dialogflow NLP agent and Google Cloud services. Demonstrated the interface on a drilling rig model. 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

1. **Huang, Z.*,** Mun, Y. J.*, Li, X., Xie, Y., Zhong, N., Liang, W., Geng, J., Chen, T., and Driggs-Campbell, K. (2022). Seamless Interaction Design with Coexistence and Cooperation Modes for Robust Human-Robot Collaboration. IEEE International Conference on Automation Science and Engineering.
2. **Huang, Z.,** Li, R., Shin, K., & Driggs-Campbell, K. (2022). Learning Sparse Interaction Graphs of Partially Detected Pedestrians for Trajectory Prediction. IEEE Robotics and Automation Letters, 7(2), 1198-1205.
3. **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.
4. Du, P., **Huang, Z.**, Liu, T., Ji, T., Xu, K., Gao, Q., Sibai, H., Driggs-Campbell, K., & Mitra, S. (2020). Online Monitoring for Safe Pedestrian-Vehicle Interactions. IEEE International Conference on Intelligent Transportation Systems.
5. 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.