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

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.
- 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.

Collaborative Manufacturing **07/20-Now**

Human-Centered Autonomy Lab *Position: Research Assistant*

University of Illinois at Urbana-Champaign *Advisor: Prof. Katherine Driggs-Campbell*

- Developed a multi-modal safety monitoring framework for human-robot interaction in manufacturing settings by applying camera-based human skeleton tracking and contact detection algorithms to UR5e robots.
- 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, in order to boost collaboration efficiency under safety monitoring.

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 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.,** 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.
2. **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.
3. 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.
4. 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.
5. Du, P., **Huang, Z.**, Liu, 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.