Shuijing Liu

Postdoctoral Scholar

Computer Science

The University of Texas at Austin

Research interests: Learning-based Robotics, Human-Robot Interaction, Machine Learning

Contact

Email: sliu105@illinois.edu

Website: https://shuijing725.github.io

Google Scholar: https://scholar.google.com/citations?user=I4k7ukgAAAAJ

Education

University of Illinois at Urbana-Champaign   2018 – 2024

Ph.D. in Electrical and Computer Engineering

Advisor: Prof. Katherine Driggs-Campbell

Thesis: Learning Structured Interaction Models for Robot Navigation in Human Environments

University of Illinois at Urbana-Champaign   2014 – 2018

B.S. in Computer Engineering, minor in Art and Design (Graduated with Highest Honor)

Undergraduate Thesis: Prostate Cancer Diagnosis with Deep Learning

Appointments

The University of Texas at Austin   09/15/2024 – current

Postdoctoral scholar with Yuke Zhu

Publications

*, † indicate equal contributions

1. **DRAGON: A Dialogue-Based Robot for Assistive Navigation with Visual Language Grounding**
   S. Liu, A. Hasan, K. Hong, R. Wang, P. Chang, Z. Mizrachi, J. Lin, D. L. McPherson, W. A. Rogers, and K. Driggs-Campbell.
   In Robotics and Automation Letters (RA-L), 2024.

2. **Predicting Object Interactions with Behavior Primitives: An Application in Stowing Tasks**
   H. Chen, Y. Niu, K. Hong, **S. Liu,** Y. Wang, Y. Li, and K. Driggs-Campbell.
   In Conference on Robot Learning (CoRL), 2023. (Best Paper/Student Paper Award Finalist)

3. **A Data-Efficient Visual-Audio Representation with Intuitive Fine-tuning for Voice-Controlled Robots**
   P. Chang, **S. Liu,** T. Ji, N. Chakraborty, K. Hong, and K. Driggs-Campbell.
   In Conference on Robot Learning (CoRL), 2023.

4. **Structural Attention-Based Recurrent Variational Autoencoder for Highway Vehicle Anomaly Detection**
   N. Chakraborty, A. Hasan*, **S. Liu***, T. Ji*, W. Liang, D. L. McPherson, and K. Driggs-Campbell.
   In International Conference on Autonomous Agents and Multiagent Systems (AAMAS), 2023.

5. **Intention Aware Robot Crowd Navigation with Attention-Based Interaction Graph**
   S. Liu, P. Chang, Z. Huang, N. Chakraborty, W. Liang, J. Geng, and K. Driggs-Campbell.

In IEEE International Conference on Robotics and Automation (ICRA), 2023.
(Best poster award at the IROS 2023 Last-Mile Robotics Workshop)

6. **Occlusion-Aware Crowd Navigation Using People as Sensors**
Y. J. Mun, M. Itkina, **S. Liu,** and K. Driggs-Campbell.
In IEEE International Conference on Robotics and Automation (ICRA), 2023.

7. **Learning Visual-Audio Representations for Voice-Controlled Robots**
P. Chang, **S. Liu,** and K. Driggs-Campbell.
In IEEE International Conference on Robotics and Automation (ICRA), 2023.

8. **Learning to Navigate Intersections with Unsupervised Driver Trait Inference**
S. Liu, P. Chang, H. Chen, N. Chakraborty, and K. Driggs-Campbell.
In International Conference on Robotics and Automation (ICRA), 2022.

9. **Off Environment Evaluation Using Convex Risk Minimization**
P. Katdare, **S. Liu,** and K. Driggs-Campbell.
In International Conference on Robotics and Automation (ICRA), 2022.

10. **Combining Model-Based Controllers and Generative Adversarial Imitation Learning for Traffic Simulation**
H. Chen, T. Ji, **S. Liu,** and K. Driggs-Campbell.
In IEEE International Conference on Intelligent Transportation Systems (ITSC), 2022.

11. **An Interdisciplinary Approach: Potential for Robotic Support to Address Wayfinding Barriers Among Persons with Visual Impairments**
M. A. Bayles, T. Kadylak, **S. Liu,** A. Hasan, W. Liang, K. Hong, K. Driggs-Campbell, and W. A. Rogers
In Human Factors and Ergonomics Society Annual Meeting (HFES), 2022.

12. **Decentralized Structural-RNN for Robot Crowd Navigation with Deep Reinforcement Learning**
S. Liu*, P. Chang*, W. Liang†, N. Chakraborty†, and K. Driggs-Campbell.
In IEEE International Conference on Robotics and Automation (ICRA), 2021.

13. **Robot Sound Interpretation: Combining Sight and Sound in Learning-based Control**
P Chang, S Liu, H Chen, and K Driggs-Campbell.
In IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2020.

14. **Robust Deep Reinforcement Learning with Adversarial Attacks**
A. Pattanaik, Z. Tang*, **S. Liu*,** G. Bommannan, and G. Chowdhary.
In International Conference on Autonomous Agents and Multiagent Systems (Extended Abstract), 2018.

Honors and Awards

• Rising Stars in EECS	2024
• Best Student Paper Award Finalist at CoRL 2023	2023
• Best poster award at the IROS 2023 Last-Mile Robotics Workshop	2023
• Conference Travel Award, ECE department at UIUC	2022
• Honorable mention for TechSAge Stretch Robot Pitch Competition	2021
• Lauren Kelley Memorial Scholarship	2017 – 2018
• Professor N. Narayana Rao Scholarship	2016
• Oakley Scholarship	2015
• Dean's List, ECE department at UIUC	2014 – 2016

Invited Talks

- **Learning Structured Interaction Models for Robot Navigation in Human Environments**
RobotiXX Lab, George Mason University, 2024.
Stanford Intelligent Systems Laboratory (SISL), 2024.
- **Robot Learning to Interact in Human Spaces**
UT Austin Robot Perception and Learning Lab, 2024.

[Stanford Vision and Learning Lab (SVL)](#), 2024.
- **A Dialogue-Based Robot for Assistive Navigation with Visual Language Grounding**
  [CSL Student Conference](#), 2024.
- **Intelligent Robot Crowd Navigation**
  [Shuzihuanyu Lecture Series](#), 2023.
- **Pedestrian Trajectory Prediction Meets Social Robot Navigation**
  [Robotics Seminar at Illinois](#), 2022.
- **Robot Learning Through Interactions with Humans**
  [Robotics Seminar at Illinois](#), 2021.

Academic Service

Students mentored

- [Changyeon Kim](#): Ph.D. student in KAIST, visiting scholar in UT Austin.
- [Haonan Chen](#): Ph.D. student in UIUC.
- [Kaiwen Hong](#): Ph.D. student in UIUC.
- [Neeloy Chakraborty](#): B.S. Computer Engineering 2021, now Ph.D. student in UIUC.
- [Eric (Weihang) Liang](#): M.S. Electrical and Computer Engineering, now at Tesla.
- [Simon (Haochen) Xia](#): B.S. Computer Engineering 2026.
- [Jerry (Ruoxuan) Wang](#): B.S. Computer Engineering 2024.
- Justin Lin: B.S. Computer Engineering 2023, now Master student in UIUC.
- Zachary Mizrachi: B.S. Computer Engineering 2024.

Reviews

- Journal reviews: [IEEE T-RO](#), [IEEE RA-L](#), [SAGE IJRR](#), [IEEE TAI](#)
- Conference reviews: RSS, ICRA, IROS, CoRL, Humanoids

Teaching

Graduate Teaching Assistant

- ECE 598: Human-Centered Robotics (Fall 2020)
- ECE 470: Introduction to Robotics (Fall 2019 - Spring 2020)
- ECE 120: Introduction to Computing (Fall 2018 - Spring 2019)

Undergraduate Course Assistant

- ECE 110: Introduction to Electronics (Fall 2016 - Spring 2018)

Industry Experience

- Research Scientist Internship, Bosch Center for Artificial Intelligence   Summer 2023
- Applied Scientist Internship, Robotics & AI, Amazon   Summer 2022

References

• Katherine Driggs-Campbell, Assistant Professor in ECE department at UIUC

  Email: krdc@illinois.edu

• Yuke Zhu, Assistant Professor in CS department at UT Austin

  Email: yukez@cs.utexas.edu

• Nancy M. Amato, Abel Bliss Professor of Engineering and Department Head in CS department at UIUC

Email: namato@illinois.edu

- Kris Hauser, Professor in CS department at UIUC

  Email: kkhauser@illinois.edu

- Junyi Geng, Assistant Professor in Aerospace Engineering department at The Pennsylvania State University

  Email: jgeng@psu.edu