Shengmiao (Samuel) Jin

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Education

University of Illinois Urbana-Champaign May 2025 *expected*
Bachelor of Science in Electrical Engineering *GPA: 3.89/4.0*

- Minor in Computer Science Minor GPA: 4.0/4.0
- Relevant course: Intro to Robotics, Control Systems, Control Theory (Grad Course), Deep Learning for CV, Principle of Safe Autonomy, Artificial Intelligence, Signal Processing, Computational Photography

Research Experience

UIUC RoboTouch Lab | *advisor: Prof. Wenzhen Yuan* September 2023 - present

- Designed and implemented an algorithm that decomposes an arbitrary image into a robot trajectory. Experimented and designed an algorithm for the robot to be able to handle liquid in an even manner. Integrated the overall pipeline presented and co-first-authored a paper published in IROS 24. [4]
- Led a project on estimating the mean and uncertainty of the center of mass for any arbitrary object with Active Perception. Submitted a first-author paper to ICRA 25. [1]
- Designed a learning approach to get sensor-invariant tactile image representations with calibration images and a sim2real pipeline. Compared and outperformed some baseline SOTA on several downstream tasks. [3]
- Investigating high-resolution tactile representation for dexterous in-hand object re-position. Training the policy on IssacGym with a teacher-student network, and zero-shot transferring to the real LEAP hand.

Tufts Higher Energy Physics Lab | *advisor: Prof. Pierre-Hugo Beauchemin* June 2020 – August 2020

- Implemented an Unfolding Algorithm to clean up data from CERN's Large Hadron Collider using Deep Learning algorithms. Examined the performance of different Deep Learning algorithms on the specific dataset and how they improve the data quality
- Presented findings in the form of an academic poster at Tufts Summer Research Experience Symposium

Publications

[1] **Shengmiao Jin**, Yuchen Mo, and Wenzhen Yuan, "Learning to double guess: An active perception approach for estimating the center of mass of arbitrary object," *IEEE International Conference on Robotics and Automation (ICRA)*, 2025.

[2] Zhi Wang*, Yuchen Mo*, **Shengmiao Jin**, and Wenzhen Yuan, "Doorbot: Closed-loop task planning and manipulation for door opening in the wild with haptic feedback," *IEEE International Conference on Robotics and Automation (ICRA)*, 2025.

[3] Harsh Gupta*, Yuchen Mo*, **Shengmiao Jin**, and Wenzhen Yuan, "Sensor-invariant tactile representation," *International Conference on Learning Representations (ICLR)*, 2025.

[4] Xinyuan Luo*, **Shengmiao Jin***, Hung-Jui Huang, and Wenzhen Yuan, "An intelligent robotic system for perceptive pancake batter stirring and precise pouring," *2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2024.

* Equal Contribution

Work Experience

UIUC ECE | *Undegraduate Grader for ECE 210 & ECE 311* August 2023 – May 2024

- Graded weekly homework assignments and handle all regrade requests for Analog Signal Processing and Digital Signal Processing Lab
- Helped revise the solution manual and grading manual of several homework assignments.

BGI-Shenzhen Institute of Biointelligence | *Intern-Algorithmic Engineer* December 2022 – June 2023

- Implemented a tool to help Biomedical Researchers to perform automatic Image Registration. Was later integrated into Cellbin, a BGI product that empowered research in Stereo-Seq
- Developed an automatic chip analysis tool to facilitate the production of biomedical chips.
- Integrated company's own Segmentation model on a server app via MONAI-based tool for easy access by biomedical researchers
- Tested performance of different segmentation models, helped fine-tune company's segmentation models

Other Projects and Activities

End-to-End Autonomous Vehicle Driving with Imitation Learning | ECE 484 Final Project Spring 2024

- Implemented and trained Imitation Learning algorithm with data collected on our own at Highbay-IRL. Tested the algorithm on the GEM vehicle. The final video can be found on Youtube.

Artwork Style Classification and Tranfer | CS 445 Final Project Fall 2023

- Implemented and trained an EfficientNetV2-based classification model, a VGG-based Neural Style transfer, and a CycleGAN-based style generator.

Reaction Wheel Pendulum | ECE 486 Final Project Fall 2023

- Implemented a 3-state PD controller with Decoupled Observer and friction compensation that can allow a pendulum to reject disturbance and stay at an unstable equilibrium position with only a rotor

Tetris On FPGA | ECE 385 Final Project Summer 2023

- Implemented the classic game Tetris on an Intel MAX10 FPGA, programmed using SystemVerilog for hardware level and C for software level.

Computer Vision Team Member | Illini Robomaster Fall 2022

- Part of Illini Robomaster CV Team that implemented object detection and tracking algorithm for competition

BitCorn | ECE 220 Honors Project Spring 2022

- Implemented a Bitcoin Price prediction model using LSTM and updated daily results on a website

Skills

Spoken Languages: English, Chinese(Bilingual)
Programming Languages: Python, C/C++, LaTeX, Matlab, SystemVerilog
Software Package: ROS, PyTorch, OpenCV, PyRo, IssacSDK, TensorFlow, RealSense SDK

Honors and Awards

Best Entertainment and Amusement Papers Finalists IROS 24
James Scholar Spring 2022 - Spring 2024
Dean's List Every Semester while enrolled
Valedictorian, West Nottingham Academy Class of 2021 May 2021