Jiahe Chen

✉ jc3472@cornell.edu 📞 (626) 684-6144 🔗 ericland.github.io in jiahe-chen-67b19585 ⚲ Ericland

RESEARCH PROFILE

I am a 4th-year PhD student studying robotics in the Electrical and Computer Engineering department at Cornell University. I am highly competent in mathematical modeling, multi-agent simulation, and data analysis, and have extensive experience in computer programming. I am enthusiastic about Artificial Intelligence, and I am seeking an internship where I can apply my knowledge in robotics and machine learning to develop best-in-class solutions for high-impact problems in the industry.

Research Focus: Robotic Construction, Multi-Agent Systems, Distributed Robot Systems
Tools: Robot Operating System (ROS), Linux, AutoCAD, Altium, Cadence
Programming Languages: Python, C, Verilog, MATLAB, Mathematica

EDUCATION

Cornell University *Sep 2019 - Dec 2024*
- **Degree:** Ph.D. in Electrical Engineering, GPA 3.82/4.0
- **Committee:** Kirstin H. Petersen (Advisor), Nils Napp, Francesca Parise

University of Pennsylvania *Sep 2017 - May 2019*
- **Degree:** M.S. in Electrical Engineering, GPA 3.97/4.0

Queen's University at Kingston *Sep 2013 - May 2017*
- **Degree:** B.S. in Engineering Physics, Minor in Electrical Engineering, First Class Honours

PUBLICATIONS

1. **Jiahe Chen** and Kirstin Petersen, *Distributed Coordination of Simple Earthmover Robots for Terrain Modification*, under review in International Conference on Robotics and Automation (ICRA), 2025.

2. **Jiahe Chen** and Kirstin Petersen, *2D Construction Planning for Swarms of Simple Earthmover Robots*, International Symposium on Distributed Autonomous Robotic Systems (DARS), 2024.

3. Danna Ma, **Jiahe Chen**, Sadie Cutler, and Kirstin Petersen, *Smarticle 2.0: Design of Scalable, Entangled Smart Matter*, International Symposium on Distributed Autonomous Robotic Systems (DARS), 2022.

4. **Jiahe Chen** and Kirstin Petersen, *Decay-Based Error Correction in Collective Robotic Construction*, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2022.

5. **Jiahe Chen**, Yifang Liu, Adam Pacheck, Hadas Kress-Gazit, Nils Napp, and Kirstin Petersen, *Errors in Collective Robotic Construction*, International Symposium on Distributed Autonomous Robotic Systems (DARS), 2022.

6. Han Hao, **Jiahe Chen**, Andrew G. Richardson, Jan Van der Spiegel, and Firooz Aflatouni, *A 10.8 μW Neural Signal Recorder and Processor with Unsupervised Analog Classifier for Spike Sorting*, IEEE Transactions on Biomedical Circuits and Systems, 2021.

PROFESSIONAL SERVICES

Reviewer for RA-L and ICRA

Teaching Assistant for ECE 4160 Fast Robots (Cornell), ECE 2300 Digital Logic & Computer Organization (Cornell), ESE 568 Mixed Signal Design and Modeling (UPenn), ESE 570 Digital Integrated Circuits and VLSI-Fundamentals (UPenn)

Member of Cornell Computer Systems Laboratory Student Steering Committee in 2021-2022

AWARDS

Jacobs Fellowship (Cornell)	*Aug 2020 & Aug 2021*
Merit-Based Fellowship (Cornell)	*Aug 2019*
Outstanding Academic Award Honorable Mention (UPenn)	*May 2019*
Dean's Scholar (Queen's)	*May 2015 & May 2017*
Excellence Scholarship (Queen's)	*Sep 2013*

PROJECTS

Collective Robotic Terrain Transformation *Mar 2022 - Present*
Advised by Prof. Kirstin Petersen, Cornell University

- Developed planning algorithms for coordinating a group of simple earth-mover robots to collectively transform a continuous terrain into a user-defined shape.
- Developed a multi-robot simulator in Python.

Collective Robotic Construction *Apr 2020 - Mar 2022*
Advised by Prof. Kirstin Petersen, Cornell University

- Developed a stochastic model for analyzing the construction duration and efficiency of a distributed multi-robot system that constructs a user-defined 3D structure.
- Developed an agent-based simulator in Python for studying the error effects in the system. Proposed a stochastic distributed algorithm for automatically correcting the errors.

Price Prediction of Used Cars *Sep 2021 - Dec 2021*
ORIE 5741 Learning with Big Messy Data, Cornell University

- Predict the price of used cars based on a raw dataset with 420k data points and 25 features.
- Tested and trained different models including regression, random forest, boosting, etc. and proposed the best prediction method.

Multi-Robot Wireless Charging System *Sep 2019 - Jul 2020*
Advised by Prof. Kirstin Petersen, Cornell University

- Designed a fully customized programmable wireless power transfer system for charging multiple modular robots powered by Li-ion batteries.

Implantable Chips for Brain-Machine Interface Applications *Jan 2018 - Jun 2019*
Advised by Prof. Firooz Aflatouni and Prof. Jan Van der Spiegel, University of Pennsylvania

- Participated in the design of an implantable chip that can classify neural signals in real time by using an unsupervised machine learning algorithm.
- Designed an implantable chip that can detect the minimum electric current for effective neurostimulation.