

Jiahe Chen

✉ jc3472@cornell.edu ☎ (626) 684-6144 🌐 ericland.github.io in jiahe-chen-67b19585 📷 Ericland

RESEARCH PROFILE

I am a recent graduate of Cornell University with a PhD in Robotics. My research focuses on leveraging swarms of robots with minimal onboard capabilities combined with advanced mathematical models to develop scalable error-tolerant multi-robot systems capable of building large-scale complex structures.

Research Interest: Multi-Agent Systems, Optimal Transport Theory, Machine Learning

Tools: Robot Operating System (ROS), Linux, AutoCAD, Altium, Cadence, LabVIEW

Programming Languages: Python, C, Verilog, MATLAB, Mathematica

EDUCATION

Ph.D. in Robotics, Cornell University, GPA 3.82/4.0 2019 - 2024

M.S. in Electrical Engineering, University of Pennsylvania, GPA 3.97/4.0 2017 - 2019

B.S. in Engineering Physics, Queen's University (Canada), First Class Honours 2013 - 2017

AWARDS

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

PROJECTS

Collective Robotic Terrain Transformation [\[Github\]](#) [🔗](#) Mar 2022 - Dec 2024

Advised by Prof. Kirstin Petersen, Cornell University

- Developed a distributed multi-robot system to form large-scale continuous terrains with complex geometries.
- **Tools:** Python, Numpy, Scipy, OpenCV, MATLAB

Physics Simulation of Robotic Construction [\[Github\]](#) [🔗](#) Mar 2023 - Dec 2023

Advised by Prof. Kirstin Petersen, Cornell University

- Developed a physics simulator for multi-robot construction with granular material.
- Built a reinforcement learning test environment and discovered optimal policies for diverse construction tasks.
- **Tools:** Python, OpenAI Gymnasium, Stable Baselines3, Pymunk, Pygame, Pandas, PyTorch, Google Cloud

Collective Robotic Construction [\[Github\]](#) [🔗](#) Apr 2020 - Mar 2022

Advised by Prof. Kirstin Petersen, Prof. Nils Napp, and Prof. Hadas Kress-Gazit, Cornell University

- Developed a distributed multi-robot system that can reliably build large-scale user-defined 3D structures.
- **Tools:** Python, NetworkX, Numpy, Scipy, OpenCV, statsmodels

Price Prediction of Used Cars [\[Github\]](#) [🔗](#) Sep 2021 - Dec 2021

ORIE 5741 Learning with Big Messy Data, Cornell University

- Discovered the best machine learning models for predicting used car pricing based on the market dataset.
- **Tools:** Python, Pandas, scikit-learn, statsmodels, Numpy, Scipy

Multi-Robot Wireless Charging System [\[Github\]](#) [🔗](#) Sep 2019 - Jul 2020

Advised by Prof. Kirstin Petersen, Cornell University

- Designed a low-cost programmable wireless power transfer system that can quickly charge multiple robots.
- **Tools:** COMSOL Multiphysics, AutoCAD, 3D Printing, EAGLE, Arduino, MATLAB

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

- Designed ultra-low-power analog and mixed-signal chips for neurostimulation and neural signal processing.
- **Tools:** Cadence, MATLAB, Mathematica,

Instrumentation System for a Proton Accelerator May 2016 - Jun 2017

Advised by Prof. Mark Daymond, Reactor Materials Testing Laboratory, Queen's University

- Designed an instrumentation system to measure the amount of protons delivered from the accelerator accurately.
- **Tools:** LabVIEW, MATLAB, Altium, Arduino