# Robin (Zihao) Lin

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## EDUCATION

**Cornell University**, *Ithaca, NY*

*Bachelor of Science in Electrical and Computer Engineering, Minor in Computer Science* *Aug. 2019 – May. 2022*

GPA: 3.998, Magna Cum Laude, College of Engineering Dean's List, Tau Beta Pi, Eta Kappa Nu

## SKILLS

**Languages**: Python, C/C++, MATLAB, Java, Bash, Swift, OCaml

**Machine Learning**: PyTorch, Tensorflow, Scikit-learn, OpenCV

**Tools/Technologies**: XCode, Firebase, Git, Autodesk Fusion 360, Solidworks, ROS/RViz

## EXPERIENCE

**Amazon Robotics**

*Embedded Software Engineering Co-op* *July. 2021 – Jan. 2022*

- Developed calibration, visualization, and sensor capture scripts for key drive unit sensor technologies including GMSL-based stereo cameras, LiDAR, and radar sensors using Python, C, and Bash.
- Developed tool for capturing data from contrast and photoelectric sensors using pyModbusTCP.
- Developed sensor calibration and acquisition APIs for two models of stereo cameras using C.
- Led an effort to improve testing and QA across Brazil-build enabled Python codebase, integrating Pytest for unit/regression testing for internal linear algebra library and Amazon S3 datastore functionality.
- Wrote design documents and held design meetings for the development of a stereo camera test automation tool.
- Developed a tool for converting sensor captures in binary file format to Rosbags for visualization in RViz.

**Apple**

*Software Engineering Intern* *April. 2021 – July. 2021*

- Worked within the CoreML/CreateML team.
- Developed a Deep Reinforcement Learning based game engine on Apple's hardware using Swift.
- Implemented an experimental feature for Automatic Differentiation in the Swift Compiler using C++.
- Hacked in the Machine Learning Platform and Technologies (MLPT) Hackathon.

**Cornell University - Autonomous Systems Lab (ASL)**

*Research Intern* *Feb. 2021 – May. 2021*

- Benchmarked the performance of Pyramid Stereo Matching Network (PSMNet) on Argoverse tracking datasets.
- Developed pre-processing and data analysis scripts for stereo camera disparity regression and point cloud to disparity transformations.
- Developed a novel shared encoder neural network architecture for Joint Translation-Stereo Learning using PyTorch.

**Uber Advanced Technologies Group (ATG)**

*Development Test Engineering Intern* *June. 2020 – Aug. 2020*

- Developed an SDV Data Collection Analysis automation tool in Python.
- Utilized GraphQL to extract metadata from SDV training data collections.
- Developed a search algorithm for metadata properties on 10,000+ collection logs, reducing total analysis time by a factor of 8.
- Implemented Google Sheets API for automated spreadsheet reporting of post-processed metadata.

## PROJECTS

**MeetUp - iOS App**

*Github Repository* *September. 2021 – October. 2021*

- Developed an iOS application that allows students to plan small-group social events with COVID-19 safety precautions in mind for Big Red Hacks 2021.
- Developed the sign-in/sign-up, user profile, event posting, and event viewing user interfaces using SwiftUI.
- Utilized the Firebase Auth and Firebase Firestore back-end frameworks for user authentication and database storage.

**Genetic Algorithm Approach to the Iterated Prisoner's Dilemma**

*Github Repository* *November. 2020 – Jan. 2021*

- Designed and developed an Iterated Prisoner's Dilemma simulation using Python and SQLite.
- Evaluated the effects of varying evolution parameters including the number of generations, population size, strategy gene length, fitness function, and growth rate.

**Over-the-Air Deep Learning Based Radio Signal Classification**

*Github Repository* *April. 2020 – May. 2020*

- Developed a convolutional neural network (CNN) model for classifying modulation schemes of radio communication signals using PyTorch and Scikit-learn.
- Compared the performance of several network architectures.
- Evaluated the effects of varying hyperparameters including learning rate, drop-out, and regularization.