# Jerrick Liu

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## SKILLS

### TECHNICAL SKILLS

Languages:
Python • Java • C++
JavaScript • HTML5 • CSS3 • LaTex
Tools + Libraries:
PyTorch • Tensorflow • Docker • Git
Node.js • Express • MongoDB
Concepts:
Machine learning • Reinforcement learning

### SOFT SKILLS

Trilingual communicator in English, Mandarin, and Spanish
Seal of biliteracy in Spanish
Team building
Reliable and consistent

## EDUCATION

### UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Bachelor's of Science in Computer Science
Urbana, IL
GPA: 4.0/4.0
James E. Scholar
Relevant Coursework:

- Software design studio
- Data Structures and Principles (Honors)
- Computer Architecture
- Probability and Statistics for Computer Science

### ORGANIZATIONS

ACM @ UIUC Artificial Intelligence and Data Analytics Special Interest Group
Participated in the Lyft Motion Prediction for Autonomous Vehicles Kaggle competition where we built a model prediction using a ResNet backbone that outputs trajectories for a autonomous vehicle agent.

## INTERESTS

### BLOGGING!

jerrickliu.github.io
I blog about my experiences working with the Air Force, machine and reinforcement learning, and other interesting topics like SSH and RSA. Have a read!

## WORK EXPERIENCE

### AIR FORCE RESEARCH LABORATORY | Research Intern

December 2020 - Present | Riverside, Ohio

- Performed computer vision techniques such as homographs on a data set consisting of aerial images of vehicles to make data versatile for training in OpenCV2

### AIR FORCE RESEARCH LABORATORY | Research Intern

June 2020 - August 2020 | Riverside, Ohio
github.com/JerrickLiu/MineRL-Stable-Baselines

- Utilized MineRL, a reinforcement learning environment based in Minecraft and OpenAI Gym to train agents through imitation and deep reinforcement learning to achieve certain objectives in the game
- Used TensorFlow and reinforcement learning algorithms such as proximal policy optimization (PPO) to maximize the rate at which agents learn to play Minecraft and to understand how A.I. agents do in long-term planning
- Incorporated Docker, writing a docker file for my code, pushing it to Docker Hub, and gained experience packaging software and deploying to other machines and servers

### AIR FORCE RESEARCH LABORATORY | Research Intern

May 2019 - August 2019 | Riverside, Ohio
github.com/JerrickLiu/PyTorch-GradCAM

- Researched various ways to implement deep learning techniques in convolutional neural networks using PyTorch, a machine learning library, to improve image classification in drones
- Implemented Gradient Weighted Class Activation Mapping (GradCAM), an explainable A.I. technique, to visualize and better understand layers of neural networks
- Presented findings to senior Air Force staff, researchers, and fellow interns

## PROJECTS

### MECHMANIA BOT | github.com/ryantwolf/mm26-python

- Developed a bot that played in a MMO game produced by Mechmania, which hosts a 24 hour A.I. hackathon to produce an A.I. agent to play their game
- Wrote game algorithms and strategies in Python to maximize the experience gained during playthroughs
- Awarded 2nd place overall

### INTUITEACH | github.com/z4kids/IntuiTeach

- Developed a web app in a week-long hackathon based in virtual education that allows teachers to pose live questions during a video call and incentivizes younger learners to be more engaged through our reward system
- Produced the backend API, using Node JS, Express, and MongoDB to store the necessary data for the web app, including questions made by the teacher, the zoom ids of teachers and students, rewards etc
- Helped connect backend to React-based frontend using JS and Node

### IMAGE MASK GENERATOR | github.com/JerrickLiu/Mask-generator

- Built an mask generator for images using OpenCV2 that may be further modified to change the backgrounds to colors or different images
- Useful for generating more data for supervised learning