Jerrick Liu

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EDUCATION

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Bachelor's of Science in Computer Science

Location

GPA: 4.0/4.0

James E. Scholar

Relevant Coursework:

- Machine learning
- Natural language processing
- Software design studio
- Data Structures (Honors)
- Computer Architecture
- Intro to Algorithms
- System Programming

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 (fluent), and Spanish (Seal of Biliteracy)

ORGANIZATIONS

ACM @ UIUC

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.

LINKS

PERSONAL WEBSITE

JERRICKLIU.COM

You can view more of my personal projects here! I also have a blog there where I write about my experiences in machine learning and the Air Force!

WORK EXPERIENCE

AIR FORCE RESEARCH LABORATORY | Research Intern

December 2020 - Present | Riverside, Ohio

- Performing computer vision techniques such as homgraphies on a data set consisting of eletro-optical (EO) and synthetic aperture radar (SAR) images to align and create a dataset.
- Conducting numerous experiments using CycleGAN, attempting to generate EO images from original SAR images to better perform image registration.
- Investigated different approaches to domain adaptation on our dataset to train a classifer that is adapated to these very different domains.

AUTONOMY TECHNOLOGY RESEARCH CENTER | Intern

May 2021 - August 2021 | Riverside, Ohio

- Created a reinforcement learning framework for natural language processing tasks through a robust custom OpenAI Gym environment.
- Integrated Mattermost and Google Drive API to query Mattermost and the group's Google Drive for meeting videos.
- Applied Vosk to transcribe meeting videos and performed topic modeling and keyword extraction on the vidoe transcripts with LDA and RAKE and compared to Mattermost channel topics and select one to post a meeting link in.

SOFTWARE DESIGN STUDIO | Course assistant

January 2021 - May 2021 | Champaign, Illinois

- Hosted weekly "code review" sessions where I reviewed five other student's code, giving feedback and helping them write better code.

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 (Grad-CAM), an explainable A.I. technique, to visualize layers of neural networks
- Presented findings to senior Air Force staff, researchers, and fellow interns

PUBLICATIONS

[1] J. Liu, N. Inkawich, and O. Nina. NTIRE 2021 Multi-Modal Aerial View Object Classification Challenge. In *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) Workshops*, pages 588–595, June 2021.