Calvin Huang

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EDUCATION

University of Michigan — Ann Arbor, MI
BSE Computer Science, GPA: 3.81 — *September 2018-expected May 2022*

- Course Highlights: Natural Language Processing, Computer Vision, Machine Learning, Programming Languages, Operating Systems, Cybersecurity, Data Structures and Algorithms, Web Systems, Databases, Computer Architecture, Fundamentals of Computer Science, Linear Algebra

PROFESSIONAL EXPERIENCE

ProQuest — Ann Arbor, MI
Machine Learning Software Engineer — *January 2021-Present*

- Leveraged BERT and T5 transformer neural networks to correct over a million erroneous documents scanned from optical character recognition systems.
- Collaborated with team of students to implement large-scale text correction pipeline for ProQuest's TDM Studio application.

Capital One - Cloud Productivity Engineering — Remote
Software Engineering Intern — *June 2021-August 2021*

- Migrated data testing tools to a serverless architecture on AWS, saving 160+ developer hours for every version upgrade and achieving over 97.2% cost-savings in the cloud.
- Obtained official AWS Solutions Architect and Certified Secure Software Engineer Certifications while leading implementation efforts on the team.

Principal Financial Group — Remote
Full-Stack Software Intern — *June 2020-August 2020*

- Spearheaded the transition to a new logging system, added security features to app deployment pipeline via back-end implementation and Ansible automation, and created a server check for conflicting jobs in order ensure reliable metrics on feature changes and deployments.
- Added deployment API features by implementing cyclical redeployment functionality and reducing deployment downtime with dynamic scheduling.
- Led intern Code Jam team in brainstorming and development of a full-stack web app hosted in AWS and mentored peers in working with web frameworks and deployment methods within the span four days.

Radiological Health Engineering Laboratory — Ann Arbor, MI
Research Assistant, Dr. Kimberlee Kearfott — *September 2019-Present*

- Researched and trained machine learning models to correlate weather and radon data to predict indoor radiation levels for use in early detection of earthquakes.
- Designed and deployed MySQL cloud database for weather and radiation sensor data to be displayed on a monitoring website. Wrote data processing pipeline for sanitizing and organizing sensor data before storage.
- Developed iOS and Android apps with a heat map interface for tracking radiation data collected by student-built radiation detectors powered by Raspberry Pi's.

UM::Autonomy Project Team — Ann Arbor, MI
Deep Learning Computer Vision Engineer — *September 2020-May 2021*

- Trained deep convolutional neural net for object detection task using boat camera footage and tested architecture configurations to tune color recognition capabilities.
- Labeled and processed training data using video footage collected from past competitions for use in training the neural net.

MRover Project Team — Ann Arbor, MI
Computer Vision Engineer — *September 2018-May 2020*

- Implemented AR tag detection algorithm using OpenCV for a find-and-identify task in the University Rover Challenge.
- Presented professional design reviews to the team to interface with other sub-teams in order to decide design priorities for implementing obstacle detection.

PROJECTS

Multi-label Audio Instrument Classification
Computer Vision Group Final Project

- Compared waveform and spectrogram approaches to audio classification on the IRMAS instrument audio dataset using deep neural nets.
- Optimized YAMNet and SoundNet architectures to achieve 88.42% mAP using waveforms and 91.44% mAP using spectrograms on test instrument data.

Robotic Arm Control Application
Desktop Simulation Application for Robotic Arm Automation

- Implemented full kinematics library using state of the art inverse kinematics algorithms in Python and TypeScript.
- Leveraged WebGL technologies to create simulation and automated control application for the robotic arm using Electron and React frameworks.

COVID-19 Heatmap
Web Application and API for Monitoring Projections of the Spread of COVID-19

- Developed efficient REST API with Rust to collect and sanitize detailed geographical data at specified time intervals and to communicate current data on-demand to front-end applications.
- Designed client-side web app using React and Google Maps to visualize global and local data of COVID-19 cases using configurable heat maps.

Video Conferencing Web Application
Video Chat Web Application for Virtual Hangouts

- Incorporated WebRTC video technology into modern video-client web app designed to be provide self-hosted peer-to-peer video communications.
- Utilized Node.js back-end socketing and custom peer-to-peer server for reliable and secure video calls across different devices.

SKILLS

Programming Languages
Python, C/C++, Java, Javascript/TypeScript, C#/.NET, MATLAB, Swift, Rust, Julia, MySQL, MongoDB, DynamoDB

Technologies and Frameworks
Jupyter Notebook, PyTorch, TensorFlow 2.0, OpenCV, HuggingFace React, NodeJS, Flask, JAX-RS, AWS, Google Cloud

CERTIFICATIONS AND HONORS

- **AWS Certified Solutions Architect - Associate** *August 2021*
- **Health Physics Society Annual Meeting Presenter** *July 2021*
- **James B. Angell Scholar** *March 2020*
- **MTV Undergraduate Fellowship Recipient** *Fall 2020, Winter 2021*
- **Tau Beta Pi, Michigan Gamma Chapter** *September 2019-Present*
- **Eta Kappa Nu, Beta-Epsilon Chapter** *September 2020-Present*