Jiahong (Harvey) Li

li_jh@yahoo.com | 608-960-1663 | GitHub: HarveyLijh
LinkedIn: Jiahong-li-389407151 | Website: Harveylijh.github.io

Education

Santa Clara University, Santa Clara, CA Expected Graduation: June 2023
Engineering Master of Science, Major: Computer Science and Engineering GPA: 4.0/ 4.0

University of Wisconsin-Madison Madison, WI Graduated: May 2021
Bachelor of Science, Major: Computer Science

Skills & Interests

- **Computer Skills:** C, C#, C++, Java, HTML, JavaScript, Node.js, React.js, React Native, Redux, Unity 3D, Three.js, CSS, Swift 5, Objective C, Adobe XD, Adobe Illustrator, Blender, SQLite, TensorFlow, OpenCV, Python, WordPress, Shell, Bash, ThingWorx Studio, Adobe Premiere
- **Other Skills:** Agile Project Management, heuristic evaluation, @Risk Analysis on Excel, Excel Solver
- **Platform:** Web, Windows, Android, Unix, Linux, Git, MacOS, IOS, iPadOS

Research Experiences

Independent Research Supported by Professor Zhiqiang Tao of Santa Clara University
Santa Clara, CA Jan 2022- Now
Independent researcher

- Design a **visual understanding model** based on **CNN** and develop **a task-independent Meta Learning algorithm** that automatically learns neural architectures for **Few-Shot Neural Architecture Search** (NAS) and weights of new tasks.
- Research on Meta-Learning and NAS, run the designed model on **Few-Shot Image Classification benchmarks** such as **Omniglot** and **miniImageNet**, gather data, and write research paper.
- Improve the algorithm and paper based on feedback from weekly discussions with the advisor.

Connected and Automated Vehicle & Highway Research Group Led by Professor Ran Bin of University of Wisconsin-Madison Madison, WI Sep 2020- May 2022
Undergraduate Researcher & Developer

- Designed and implemented a **trajectory prediction Machine Learning model** with a team based on **Lyft's extensive dataset and l5kit**.
- Researched on trajectory prediction models such as **CoverNet**, **MultiPath**, and **Multi-agent trajectory forecasting techniques** to improve our algorithm's prediction accuracy.
- Tested the designed algorithm in CARLA on simulated autonomous driving vehicles under near-real-life street conditions for trajectory predictions.
- Wrote weekly research reports and demonstrated prediction results for a research group over 30 people.
- Competed in the Lyft Motion Prediction for Autonomous Vehicles Kaggle competition with the team.

Professional Experiences

Santa Clara University Frugal Innovation Hub Santa Clara, CA Feb 2022- June 2022
Full-stack Developer

- Design and implement a frugal and user-friendly **full-stack** web application with **React**, **Bootstrap, Spring Boot, MongoDB, GitLab CI/CD pipeline, and AWS**, which helps current and future **Costa Rica refugees** to learn migratory regularizations and rights, as well to prepare for naturalization exams.
- Improve user experience and implement new features based on feedback and requirements from Costa Rica NGO and government during weekly meetings.

uSens San Jose, CA Jun 2020- Aug 2020
Computer Vision & Deep Learning Intern

- Designed a safe driving detector with a team, which analyzes **real-time videos** and detects if the driver is smoking, using a cellphone, or driving without a seat belt based on **face detection** and **gesture analysis**.
- Developed the safe driving detector using **Python**, based on **OpenCV**, **TensorFlow**, and **NumPy**, and trained it with a dataset of **102k images and videos** retrieved from related websites using Python scripts.

Microsoft Beijing, China Jun 2018- Aug 2018

Software Engineer Intern

- Developed and edited SDK with **C#** for Azure products including Azure IoT and Azure IoT Edge.
- Tested Machine Learning algorithms for facial recognition and mechanical defect detection.
- Learned and presented Azure Stack and Azure Cloud Technology to other departments.

Visionary Intelligence Beijing, China Jun 2019- Aug 2019

Front-End Engineer Intern

- Implemented a **human-computer interaction** (HCI) website with **HTML5**, **JavaScript**, and **Apache Tomcat**, to help users **create, retrieve, update, delete** (CRUD) test case data for training an AI customer service system.
- Designed and implemented an **API layer interface** connecting back-end and front-end.
- Improved front-end interfaces and back-end functions according to users' feedbacks.

Fundamental Industry Center, Tsinghua University Beijing, China Jan 2018- May 2019

Part-time AR & MR Developer

- Developed **AR** and **MR** (Mixed Reality) Industrial Applications using **JavaScript** based with Microsoft **HoloLens** and PTC ThingWorx Studio for the McKinsey&Company's AR & IoT program.
- Connected finished product on production lines in real factories with **IoT** technology via HoloLens.

Project Experiences

Mirroreal Jan 2022- Now

- Manage a team of 10 to design and develop a **3D Metaverse social infrastructure** using **Web Assembly** and **WebGPU engine in BABYLON.js** as frontend, **Agora** as live stream feature, **WebSocket** and **Colyseus** as backend, **MongoDB** and **Tencent Cloud** as database and server.
- Research and implement web applications with cutting-edge technology of **WebGPU** to maximize 3D graphic performance on mobile platforms.

Course Navigator Web App Oct 2020- Nov 2020

- Developed a course selection and enrollment web app based on **React** framework, with **REST API, React-Redux**, **React-Navigation, jQuery,** and **Bootstrap** to help users find, filter, and enroll courses, check course availability, examine current prerequisite level, and see potential future course plan.
- Implemented a **course recommendation algorithm** to recommend courses that users may interested to based on users' course history, major and minors, as well as past rating of taken courses.
- Designed front-end UI using **Adobe XD** and enhanced usability through **heuristic evaluation**.

React Native Fitness App Project Aug 2020- Sep 2020

- Designed and implemented a mobile fitness application based on **React Native** framework with **REST API**, **React-Redux**, **React-Navigation**, and **Async-Storage** Libraries (managed with **Node.js** and **Node Package Manager**), enabling users to set goals and easily track their daily calories and other macronutrients' intake by recording their diets and daily exercises on either IOS or Android platforms.
- Designed front-end UI components with **Adobe XD**, using **paper**, **interactive**, and **experience prototyping** techniques as well as visual design principles.
- Improved the application to allow users with visual impairments to efficiently use the application by integrating **React Native's accessibility** features and assistive technologies.

Image Annotation, ML Integrated Web App Jan 2020- March 2020

- Designed and implemented an image annotation app based on **React** framework and **React Bootstrap**, which **takes a great variety of image format** as input and allows users to annotate images of their choices with polygon and text attributes, to feed their Machine Learning projects as image training data.
- Implemented saving and loading chart features with **REST API**, allowing users to save annotation results as to the back-end assorted with their accounts.
- Developed functions to connect with back-end application based on **MongoDB** which, based on a trained machine learning model, analyzes users' image and designed target, then generate suggested annotations that can be edited later on in the front-end as users desired.

AI-Handwriting Reader Project Oct 2019- Dec 2019

- Designed and implemented a **2-layer, feed-forward neural network** to read users' handwriting using **Java Object-Oriented Programming** paradigm.
- Implemented program to parse handwriting images and trains the neural network using the **back-propagation** algorithm with the **ReLU** and **Softmax** activation functions.