

Jiahong (Harvey) Li

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Education

Santa Clara University, Santa Clara, CA

Expected Graduation: June 2023

Engineering Master of Science, Major: Computer Science and Engineering

GPA: 3.95/ 4.0

University of Wisconsin-Madison Madison, WI

Graduated: May 2021

Bachelor of Science, Major: Computer Science

Skills & Interests

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

Research Experiences

Resilience Project Led by Professor Magy Seif El-Nasr, GUIILab at UC Santa Cruz

San Jose, CA

Jul 2022- Now

Research Intern

- Design a puzzle-based alternate reality (ARG) research game, LUX, with a team using **real-world interactions and consequences**, measuring participants' resilience and stress using their **facial, heart rate, and chat data**.
- Facilitate playtests and develop a tool to pre-process and visualize all participants' data using **Python** and **related libraries such as pandas, matplotlib, and datetime**.
- Design and implement **NLP models based on BERT and GPT-3** to recognize and analyze participants' emotions and problem-solving strategies under stressful contexts within LUX.
- Participate in **literature review** as well as **paper writing**, and submit the research paper to **Foundations of Digital Games (FDG) 2023**

Connected and Automated Vehicle & Highway Research Group Led by Professor Bin Ran, the UW-Madison

Madison, WI

Sep 2020- May 2022

Researcher & Developer

- Designed and implemented an **LSTM trajectory prediction Machine Learning model** using **Lyft's extensive dataset and l5kit**.
- Researched trajectory prediction models such as **TNT, 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.

Independent Research Supported by Professor Zhiqiang Tao, Santa Clara University

Santa Clara, CA

Jan 2022- June 2022

Independent researcher

- Designed 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.
- Researched on Meta-Learning and NAS, ran the designed model on **Few-Shot Image Classification benchmarks** such as **Omniglot** and **miniImageNet**, gathered data, and wrote research paper.
- Improve the algorithm and paper based on feedback from weekly discussions with the advisor.

Professional Experiences

Nanjing Weiyuan Zongheng Network Technology Co., Ltd.. Remote at Santa Clara, CA

Jun 2022- Now

Partner & Tech Lead

- Lead a team of 10 to develop a community-based, career-exploring social app for Generation Z, using Native language(**Objective-C for iOS, Java for Android**) as frontend, **Node.js** as backend, **MySQL** as database, **AliCloud** as cloud service, and other third-party SaaS to support various features such as directing messaging and SMS verification.
- Facilitate feature development and catchup meetings to manage the team based on annual and monthly **OKR alignments** under an **agile software development** practice
- Design and implement a **semantic search** algorithm using **TensorFlow** to optimize searching efficiency and accuracy

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

- Developed a safe driving detector with a team, which analyzes **real-time videos** and detects if the driver is smoking, using a cell phone, or driving without a seat belt based on **object detection, face analysis, and gesture analysis**.
- Designed and implemented a **multimodal** driving smoking detector **Machine Learning model** using **Python and related ML libraries**, based on a **state-of-art gesture detection model, YOLOv3, and OpenFace**, and trained it with a dataset of **102k images and videos**.

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.

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 McKinsey&Company's AR & IoT program.
- Developed an AR and MR intelligent learning system focusing on surgery teaching for Peking Union Medical College using **JavaScript** based with Microsoft **HoloLens** and other backend technologies.
- Connected finished products on production lines in real factories with **IoT** technology via HoloLens.

Visionary Intelligence Beijing, China

Jun 2019- Aug 2019

Front-End Engineer Intern

- Implemented a **user-centered data dashboard** website with **HTML5, JavaScript, and Apache Tomcat**, to help users **create, retrieve, update, and delete** (CRUD) test case data for training an AI customer service system.
- Improved front-end interfaces and back-end functions according to users' feedback.

Project Experiences

Loci 3D

Jul 2022- Now

- Design and develop a 3D **Text Mesh Engraving & Extrusion** tool using **TypeScript, Three.js, and THREE-CSGMesh** with **webpack 5** as a packing tool, and deploy on a **GitHub Page**.
- Design and implement a 3D **Level of Details(LOD)** generation tool that automatically calculates 3D assets with different levels of detail based on user input using **Python, Open3D, gltfliB, and Numpy**.

Babylon PostEffect Designer

Jun 2022- Jul 2022

- Designed and developed a 3D post effect editor tool that provides users with complete control of post effects adjustments of their 3D assets using **BABYLON.js**.

- Designed slider and input box for all numeric values to achieve a more user-friendly workflow and implemented metadata import and export features for users to share and apply post effects with ease.

Mirroreal

Jan 2022- May 2022

- Design and develop a **3D Metaverse social infrastructure app** using **Web Assembly** and **BABYLON.js's WebGPU engine** 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

- Implemented an image annotation app based on **React** framework and **React Bootstrap**, which **supports image formats** and allows polygon and text annotation for their Machine Learning models.
- Implemented save and load features with **REST API**, allowing users to save annotation results to their back-end assorted accounts.
- Developed a function that suggested annotations for users' images based on YOLO object detection.

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 a program to parse handwriting images and trains the neural network using the **back-propagation** algorithm with the **ReLU** and **Softmax** activation functions.