

# Jiahong (Harvey) Li

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## Education

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**University of California Santa Cruz** Expected Graduation: Jun 2028  
PhD @ GUIIlab, Computational Media

**Santa Clara University, Santa Clara, CA** Graduated: Jun 2023  
Engineering Master of Science, Major: Computer Science and Engineering GPA: 3.8/ 4.0

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

## Skills & Interests

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- **Computer Skills:** C, C#, C++, Java, Python, LangChain, Milvus, LlamaIndex, JavaScript, Node.js, React.js, React Native, Redux, Unity 3D, Three.js, Swift 5, Objective C, Adobe XD, Adobe Illustrator, Blender, SQLite, TensorFlow, OpenCV, WordPress, Shell, Bash, ThingWorx Studio
- **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

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**Resilience Project Led by Professor Magy Seif El-Nasr, GUII Lab at UC Santa Cruz**  
Santa Clara, CA Jul 2022- Jul 2023  
*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**

**Independent Research Supported by Professor Zhiqiang Tao, Santa Clara University**  
Santa Clara, CA Jan 2022- Jun 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.

**Connected and Automated Vehicle & Highway Research Group Led by Professor Ran Bin, the UW-Madison**  
Madison, WI Sep 2020- May 2022  
*Undergraduate 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.

## Professional Experiences

**Nanjing Weiyuan Zongheng Technology Inc.** Remote at Santa Clara, CA Jun 2022- Now  
*CTO & Founder member*

- Lead a team of 10 to develop an AIGC decentralized social app for Generation Z, using cutting-edge LLM and proprietary AI technologies.

**Santa Clara University Frugal Innovation Hub** Santa Clara, CA Feb 2022- Jun 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 cellphone, 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.

**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, 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.

**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.
- Connected finished products on production lines in real factories with **IoT** technology via HoloLens.

## 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.