CHIEH-YING LAI

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Education

University of California, Santa Barbara	**Sept 2023–Present**
M.S. Student in Computer Science **GPA: 3.7 / 4.0**	*Santa Barbara, CA*
National Chung Hsing University	**Sept 2020–Jun 2022**
M.B.A in Management Information System, **GPA: 4.1 / 4.3**	*Taichung, Taiwan*
National Taichung University of Science and Technology (Elite Program)	**Sept 2018–Jun 2020**
Bachelor of Information Management, **GPA: 3.9 / 4.0**	*Taichung, Taiwan*

Related Experience

National Chung Hsing Uni./ Occupational Safety and Health Admin., MOL — **Feb 2021–Feb 2022**
Research Assistant — *Taichung, Taiwan*

- Developed an edge computing-assisted AI system employing object detection and semantic segmentation techniques by Python Pytorch to enhance safety protocols within structural steel construction.
- Utilized Python and machine learning models to implement safety detection and alarm interfaces using the Django framework, and deployed the edge computing system powered by Jetson Nano.
- Achieved a high precision for helmet detection (F1-score: 93.51%) and hook detection (F1-score: 97%), with strong performance on the IoU metric for safety net segmentation (0.86) and guardrail segmentation (0.65).
- Led a team in training deep learning models, deploying them on edge devices, and annotating data.

Taiwan Semiconductor Manufacturing Co., Ltd — **Aug 2021–Dec 2021**
Research Assistant — *Taichung, Taiwan*

- Constructed and optimized YOLOs and behavior detection models using Python to assist supervision in cleanrooms.
- Achieved a high mean average precision (99.77%) and the average IoU (84.46%) of the object detection model.

ShangDa Plastic Inc. — **Jun 2020–Feb 2021**
Software Developer — *Miao-li, Taiwan*

- Devised a Manufacturing Information Management System, enabling end-to-end digital management of customer information, raw material procurement, and inventory control processes.
- Constructed a PHP Laravel backend with a MySQL database and a Vue.js frontend, integrating API design to facilitate smooth communication and interaction within the MVC architecture.
- Achieved a notable 50% increase in data input efficiency and eradicated human errors entirely.

Wanin International — **Mar 2020–Dec 2020**
Co-op Full Stack Developer — *Taichung, Taiwan*

- Established a responsive official website and a library book donation management system, facilitating data entry for foundation staff and reducing data input time by 70%.
- Implemented MVC pattern backend and RESTful APIs by using PHP Laravel Framework.
- Designed the UI of the official website using Figma and developed responsive frontend with jQuery and Bootstrap.

Selected Projects

Indoor Navigation | *UCSB CS291I Visual Computing and Interaction (XR) final project* — **Apr 2024–Jun 2024**

- Developed an offline-capable AR iOS app with Swift, ARKit, and CoreML to enhance indoor navigation in emergencies.
- Enabled real-time syncing with Firebase Firestore for floor plans, using cloud functions and caching for offline access, supporting visually impaired users and eliminating beacon reliance.

AgentUTest | *UCSB CS272 Software Engineering final project* — **Feb 2024–Mar 2024**

- Developed an automated testing tool supporting multiple programming languages, leveraging agent-driven mechanisms for efficient and accurate test case generation.
- Utilized OpenAI GPT-4 API for automated, readable test case generation across Python, Java, C, and C++.
- Created a dynamic visualization interface using ReactJS and Python Django for interaction with the code testing.

Relevant Technical Skills

Programming Languages: Python, JavaScript, C++, Swift, PHP
Operating System: Linux (Ubuntu, GPU, Jetson Nano), macOS, Windows Server
Distributed Systems: TCP/IP, NGINX, AWS, Docker, Kubernetes, Microservices Architecture
Software Development: Python Django, ReactJS, SQL, HTML5, CSS, RESTful API, Git, Agile
Artificial Intelligence/Machine Learning: Pytorch, Keras, Matlab, Scikit-learn, Pandas, Numpy, Matplotlib, OpenCV, Computer Graphics, OpenAI, Computer Vision, Generative AI,, Large Language Models (LLMs)
Languages: Chinese (native), English (fluent), Japanese (fluent, JLPT N1)