

# Yunzhong (Shawn) Xiao

LinkedIn | FaceBook | <https://shawn-yzxiao.github.io> | (510) 365-0141 | yunzhonx@andrew.cmu.edu

## EDUCATION

### CARNEGIE MELLON UNIVERSITY

#### MASTER OF SCIENCE IN MOBILE AND IOT ENGINEERING

Aug 2023 - Dec 2024 | Pittsburgh, PA  
Computer Systems  
Distributed Systems  
Software Construction

### SOUTHERN UNIVERSITY OF SCIENCE AND TECHNOLOGY

#### BACHELOR OF ENGINEERING IN INDUSTRIAL DESIGN

Sep 2019 - July 2023 | Shenzhen, China  
GPA: overall 3.68/4.0; major 3.79/4.0  
Honors: Outstanding Graduate  
Machine Learning  
System Design and Management  
Computer Simulation Design

### UNIVERSITY OF CALIFORNIA, BERKELEY

#### EXCHANGE STUDENT IN ELECTRICAL ENGINEERING AND COMPUTER SCIENCE

Jan 2022 - Jan 2023 | Berkeley, CA  
GPA: 4.0 / 4.0

**CS61B** Data Structures (A)

**CS61C** Computer Architecture (A)

**INDENG174** Enterprise-Scale Systems Simulation (A+)

**CS188** Introduction to Artificial Intelligence

**CS198** Extended Reality Development

## SKILLS

#### Programming Language

Python • Java • C • C# •  $\text{\LaTeX}$  • MatLab • RISC-V • JavaScript • HTML

#### Tools

Unity 3D • Git • VS Code • Docker • AWS  
• Cloudinary • LangChain • Flask • ChromaDB

## COURSE PROJECTS

**Gitlet** Built a version control software in Java with similar functions as Git such as remote repositories and branching. It uses data structures like directed graphs, linked list, HashMap, and search algorithms such as Depth First Search, A\* search.

**CS61CPU** Constructed a small CPU that runs actual RISC-V instructions on Logisim, applied 2-stage pipeline to increase speed.

## EXPERIENCE

### UCB ELECTRONIC SYSTEMS DESIGN RESEARCH

Undergraduate Researcher

Jun 2022 - Aug 2022

Co-developed an Intelligent Tutoring System (ITS) to train psychomotor skills in Virtual Reality (VR), resulting in 32.3% higher learning gains than self-guided baseline (p-value < .05) with an effect size of 0.41

- Created Knowledge Identification algorithm based on a directed acyclic graph to output next best sample point out of 30
- Co-developed VR environment in **Unity**, wrote python scripts to check trainee's physical behavior in VR and provide feedback prompts
- Developed interface to fit Bayesian model prior to human experiment, assisted human experiment with 30 examinee

### UCB THEORETICAL & APPLIED FLUID DYNAMICS LAB

Head Researcher

Jan 2022 - Jan 2023

Led development of Unmanned Surface Vehicles Swarm to Collect Real-time Marine Data; managed team of 10 undergraduates and graduates from 6 countries; led electrical system development

- Built first generation of electrical system, including autopilot based on ArduRover firmware, integrated multiple ocean environment sensors using Arduino, and mesh network communication based on **DigiMesh** protocol
- Deployed Google protobuf on raspberry pi, improved data transmission efficiency by 75%

### SUSTECH MACHINE LEARNING SYSTEMS DESIGN

Head Undergraduate Researcher

Aug 2021 - Dec 2021

Proposed a new approach to chip packaging design optimization by applying **Bayesian optimization** machine learning algorithms, leading to a 15% objectives improvement.

- Implemented several classical evolutionary algorithms such as NSGA-II and state-of-the-art **surrogate-assisted algorithms** based on python or Matlab
- Refined the finite element model of the chip packaging in **Abaqus simulation** and constructed its interface to our algorithms

## INDIVIDUAL PROJECTS

**ChatYTB** Designed and implemented a full-stack web application deployed on **AWS** to **interact with YouTube video content** in real-time. The system improves efficiency in information extraction by providing concise responses to user queries about video content, supported by timestamped video clips for context

- Incorporated **HuggingFace's MiniLM model** for semantic text embeddings and **OpenAI's GPT 3.5** for query retrieval and summarization
- Integrated **Python's Flask** for back-end development, used **LangChain** for functionalities such as transcript splitting and **ChromaDB** vectorstoring
- Developed a user-friendly **front-end with HTML/CSS and jQuery**, hosted on **NGINX** server

**PAM Studio** Developed a web app for **generating custom avatar portraits** based on users' personal photos and their preferred styles

- Engineered a **Flask-based back-end**, responsible for image processing, prompt fetching, and interaction with Midjourney and **Cloudinary** cloud storage
- Prompt engineered 16 prompts for artistic portrait styles
- Constructed an **API wrapper for Midjourney Discord Bot**, and leveraged **Midjourney** to transform users' photos into stylized avatar portraits, guided by customized prompts