

# JIAEN YU

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## EDUCATION

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### University of California, San Diego

Ph.D. in Data Science

Sept. 2024 - Present

### University of California, San Diego

M.S. in Computer Science

Coursework: Data Structure, Operating System, Networked Systems, Software Engineering

Overall GPA: 3.88

June 2023

### Jiangsu University of Science & Technology

B.S. in Electronic Information of Science & Technology

Overall GPA: 3.69 - Ranked 5/60

June 2021

## RESEARCH EXPERIENCE

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### CompassX: A Learning Web Application to Enhance Metacognition

*Halicioğlu Data Science Institute, UC San Diego*

Feb 2024 - Present

*La Jolla, CA*

- Developed CompassX, a learning platform designed to help computing students enhance metacognition skills, including planning, self-monitoring, self-evaluation throughout their learning progress
- Built the web application using Python (Flask) for back-end, JavaScript, HTML, CSS for front-end, and PostgreSQL for database management
- Conducted statistical analysis on user performance data, employed techniques such as the two-sample t-test, Mann-Whitney U test, bootstrap sampling, and density plot visualization to evaluate the effectiveness of the web application
- Implemented the platform with hundreds of students, observing that long-term users achieved better performance

### ClearMind: Java-based Application to Address Procrastination

*Halicioğlu Data Science Institute, UC San Diego*

May 2023 - Present

*La Jolla, CA*

- Designed and developed a Java-based Acceptance and Commitment Therapy (ACT) application to address psychological challenges such as procrastination, thereby improving academic performance among computing students
- Prototype UX in Figma; designed and integrated incentivization mechanisms to improve user engagement
- Implemented user authentication, survey, therapy and meditation features with Java, Android SDK, XML and HTML
- Utilized the NoSQL database Google Firebase to implement back-end database storage and retrieval of user data
- Conducted two rounds of semi-structured focus group study to investigate the effectiveness and perceived usefulness

### Robot Object Detection Based on Deep Learning [[paper](#)]

*Robotics Research Lab, Jiangsu University of Science and Technology - ML Student Researcher*

Mar. 2019 - Mar. 2020

*China*

- Devised a Robotic Obstacle Detection Method, equipping a robot with visual perception capabilities for obstacle recognition and avoidance, using Python, OpenCV, and TensorFlow
- Built a MobileNet-SSD-based target detection/recognition Model using Python and TensorFlow framework
- Achieved 95% accuracy, surpassing the original SSD algorithm by 10% in speed and reducing model complexity
- Published the paper “Design of Robot Object Detection Based on Deep Learning” in Electronic Design Engineering

### Crowd Counting Based on Deep Learning, Undergraduate Thesis

Mar. 2021 - June 2021

- Applied density map estimation method to estimate the crowd density of images with the AI Studio platform
- Developed and trained CNN, MCNN, and CSRNet model with Python and PaddlePaddle deep learning framework
- Deployed CSRNet model successfully on server-side with mean absolute error of 2.179, which is 6x lower than average

## TEACHING EXPERIENCE

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**California State Summer School for Mathematics and Science, COSMOS UCSD** June 2024 - Aug. 2024  
*Cluster Assistant for Course - Computers in Everyday Life* La Jolla, CA

- Facilitated lab sessions, teaching Python, C/C++ for embedded systems, and Arduino to 25 high school students
- Guided on final projects, including the development of embedded systems and DL-based image classification models
- Provided individualized support, fostering students' understanding of course contents and project design

## PUBLICATION & PRESENTATION

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- **Jiaen Yu**, Anshul Shah, John Driscoll, Yandong Xiang, Xingyin Xu, Sophia Krause-Levy and Soohyun Nam Liao. Student Engagement with Metacognition-based Interventions in Computing and its Relationship with Learning Outcomes. Poster accepted for presentation at the SIGCSE Technical Symposium (TS), 2025.
- **Jiaen Yu**, Guojun Ma, Yongheng Ren, Yajun Wang. (2021). Design of Robot Object Detection Based on Deep Learning. *Electronic Design Engineering* (08), 1-4.

## PROJECTS

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**Patient Monitoring System for ICU patient at Hospital [web]** Mar. 2023 - June 2023

- Constructed a Patient Monitoring System, grounded in Human-Computer Interaction (HCI) principles, designed to mitigate complications from prolonged bed rest in ICU settings
- Developed a real-time Body Movement Capture Model using OpenCV and MediaPipe to monitor and annotate patients' postures; successfully deployed on a Raspberry Pi board integrated with a Raspberry Pi camera
- Devised an algorithm to classify patient posture using the monitored posture features for medical suggestions
- Prototyped an interactive analysis page UI in Figma to display integrated monitored information and multi-level alerts

**Interactive Palm Reading Web Application [web]** Mar. 2023 - June 2023

- Collaborated with 9 teammates to developing an interactive Palm Reading CRUD Web Application
- Designed website themes and layout with Figma wireframe as the team planner
- Built and maintained the front-end chat interaction page and navigation bar with HTML, CSS and JavaScript
- Implemented user chat history storage to provide a more personalized service
- Utilized StandardJS as the JavaScript linter and Jest as the testing framework to ensure code consistency and quality

**Clothing Recommendation System for Different Occasions** Sept. 2022 - Dec. 2022

- Implemented several predictive models to recommend proper clothing for various occasions using Python
- Performed an exploratory analysis of clothing fit dataset and preprocessed data using NumPy and Pandas Library
- Built a logistic regression model, introducing the Jaccard Similarity to improve performance and a BERT model
- Increased the accuracy of the models by 3 times and 2.7 times, respectively (compared to the baseline model)

## HONORS & AWARDS

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**Outstanding Graduate - Jiangsu University of Science and Technology** 2021

**The Second Prize Academic Scholarship - Jiangsu University of Science and Technology** 2019

## TECHNICAL STRENGTHS

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<b>Computer Languages</b>	Python, Java, Golang, C/C++, SQL, JavaScript, HTML, XML, CSS, Haskell
<b>Frameworks &amp; Tools</b>	Android SDK, Flask, gRPC, Git, Linux, Docker, LabVIEW, TensorFlow, OpenCV
<b>Databases</b>	MySQL, MongoDB, PostgreSQL, Google Firebase