

Derek Hua

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Education

University of California, Los Angeles (UCLA)

Los Angeles, CA

Bachelor of Science, Computer Engineering | GPA: 3.74

June 2024

Publications

- Co-Author, "Capricorn: Towards Real-time Rich Scene Analysis Using RF-Vision Sensor Fusion", SenSys 2022

Work Experience

Lockheed Martin

Sunnyvale, CA

Artificial Intelligence Engineer Intern | Python, Tensorflow, Keras, Docker

June 2023 - September 2023

- Designed and implemented a specialized Tensorflow unsupervised computer vision model within an agile work environment, yielding a foundational architecture adopted across multiple projects
- Proactively investigated complex computer vision challenges while collaborating with colleagues from diverse teams
- Preprocessed data, engineered custom Keras data loader, and developed visualization tools to present findings effectively

Networked & Embedded Systems Laboratory, UCLA

Los Angeles, CA

Undergraduate Researcher | Python, PyTorch, scikit-learn, C++, ROS

June 2021 - Present

- Conducting research on sequence-to-sequence models to reconstruct heartbeat and respiratory waveforms from UWB signals, exploring a range of techniques including RNNs, Transformers, and Variational Inference models
- Training SVM classifier with 98% accuracy to detect vibrational states of household appliances using UWB radar sensors
- Constructing multimodal sensor fusion nodes in C++ and Python on Linux edge devices, using ROS for sub-50ms data transmission between nodes, resulting in a smooth 20 fps digital twin of a real-world space

Abbott Diabetes Care

Alameda, CA

Research and Development Intern | Python, NumPy, Matplotlib

July 2020 - September 2020

- Analyzed glucose sensor data and error codes using pandas and NumPy, revealing root causes of sensor failures
- Developed visualization tool to present sensor failure timeline using Matplotlib in Python to communicate findings

Personal Projects

SnapCook - AI Application | TensorFlow

June 2022 - August 2022

- Created an application to recognize vegetables using computer vision and recommend a recipe containing the ingredients
- Designed CNN from scratch in PyTorch to detect 36 different fruits and vegetables with 96% test accuracy

Bruinfessions - Web Application | React, Node.js, Firebase, Git, Javascript, CSS

March 2022

- Spearheaded a team of 5 by architecting a web app enabling users to anonymously post, like, and favorite confessions
- Utilized React and Javascript to build dynamically updating front-end features: Sorting, Favoriting, Liking
- Engineered backend and Google Auth sign-in using Firebase and Node.js, allowing real time storing and syncing of data

Micromouse - Autonomous Maze Solving Robot | C, STM32, Soldering

October 2020 - May 2021

- Developed autonomous control system on STM32 microcontroller using IR sensors and optical encoders
- Implemented flood fill maze solving algorithm and designed a queue in C to solve for an optimal path through the maze

Technical Skills

Languages: Python, C/C++, Java, JavaScript, HTML/CSS, Git Source Control, Unit Testing

Frameworks: Pytorch, Tensorflow, Keras, Firebase, React, Node.js

Platforms: x86-64 architecture, Nvidia Jetson platform, STM32Cube platform