Shifanaaz Fazalur

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Portfolio: https://shifanaazfazalur.github.io/portfolio/ | **LinkedIn**: https://www.linkedin.com/in/shifanaaz-fazalur/

RESEARCH INTERESTS

AI and robotics for environmental monitoring and conservation, robotics perception, visual-inertial SLAM, computer vision, deep learning and AI/ML for real-world sensing, AR/VR sensing and spatial computing, robotics systems and real-time control, computer networking, wireless communication in distributed sensing and multi-robot coordination.

EDUCATION

University of California, Davis, CA - B.S in Computer Science (GPA: 3.822/4) June 2026

WORK EXPERIENCE

Research Assistant - Robotics Perception (Visual SLAM based AR Drone System), UC Davis Jul 2025 – Present
Supervisor: Prof. Nelson Max Ph.D

- Developing a multi-drone visual-inertial SLAM system using Intel RealSense T265; rebuilt legacy pipeline to support updated SDKs/hardware.
- Compiled and configured librealsense C++ SDK on Ubuntu/Jetson; enabled 6-DoF tracking and map persistence/relocalization.
- Implementing a TCP/IP pose-streaming pipeline to Unity for real-time AR visualization and multi-user environment mapping.
- Advancing networked SLAM for shared mapping across two quadcopters; contributing to a SIGGRAPH 2026 submission.

Research Assistant - Natural Language Processing for Climate & Policy, UC Davis Mar 2025 – Present
Supervisors: Prof. Carl Stahmer Ph.D.; Prof Akshita Sivakumar Ph.D.; Colton Baumler

- Built natural language processing (NLP) pipeline for R/Python pipeline for 500+ environmental-policy comments; worked with PDF/OCR text extraction and preprocessing.
- Fine-tuned BERT/RoBERTa models for policy classification; evaluated model metrics and improved workflow reproducibility.
- Delivered results to non-technical collaborators and maintained a clean documentation stack in GitHub/Google Drive.

ACADEMIC PROJECTS (SELECTION)

Recyclable Waste Image Classification using Computer Vision & XAI (in progress), Fall 2025

- Building a machine learning and computer vision pipeline in Python using a Kaggle waste classification dataset to perform binary image classification (recyclable vs non-recyclable).
- Implementing a logistic regression baseline and a convolutional neural network (CNN) model, comparing their performance, and applying image processing (Gaussian blur, edge detection) plus XAI techniques (e.g., highlighting bottle regions and boundaries) to interpret and visualize model decisions.

Student Success Prediction ML & Webapp, Spring 2025

- Built a Flask-based web application with neural network, random forest, and linear/polynomial regression models using student lifestyle habits (study hours, sleep, diet, etc.) to predict final exam scores, following the software development lifecycle from design and implementation through testing and deployment.
- Trained models on 200+ student profiles using K-fold cross-validation.

Register-Level CPU Simulation & Cache Design, Spring 2025

- Designed and tested custom CPU and cache system using Logisim (multiplexers, ALUs, decoders, etc).
- Optimized the datapath to reduce execution cycles for basic arithmetic operations through circuit optimization.

Secure Communications via Covert Timing Channel Simulation, Winter 2025

- Simulated packet transmission and buffer (overflow/underflow) dynamics in Python.
- Conducted over 100 test cases to analyze system performance and data leakage rates under varying network loads.

LEADERSHIP & TEACHING

Machine Learning Student Network Club, Role as Marketing Director May 2025 - Present

- Designed and executed digital marketing campaigns for ML workshops, reaching 1,000+ students and 3x increase in applicants in one quarter; club content engagement reached 83.4k as of Oct 2025.

Student Assistant - Computer Architecture, UC Davis Jun 2025 - Present

- Tutoring students and supporting architecture projects involving FSMs, datapaths, cache, and CPU implementation in Logisim to better understand how instructions flow, communicating complex concepts clearly in both written and verbal explanations.

CERTIFICATIONS

IBM Z Xplore Concept Badge Oct 2025

- Certified in IBM Z Xplore Concept Badge (mainframe architecture, Linux on Z, z/OS, cloud and DevOps fundamentals).

HONORS & AWARDS

Dean's Honor List, College of Engineering, UC Davis - Spring 2024, Fall 2024, Winter 2025

- Recognized for academic excellence. Ranked in the top 16% of students in the College of Engineering based on term GPA.

SKILLS

Programming Languages: C, C++, Python, R, Java

Robotics, Perception & SLAM (in progress)**:** SLAM concepts, 6-DoF pose estimation, Intel RealSense T265, librealsense (C++ SDK), NVIDIA Jetson (Ubuntu), running RealSense C++ examples via SSH, integration of pose data with Unity for AR/VR-style visualization

ML, LLMs & Vision: machine learning, deep learning, supervised learning, scikit-learn, cross-validation, model evaluation, computer vision, image classification, image preprocessing, transformer models (BERT/RoBERTa), large language models (LLMs), PDF text extraction, text preprocessing, HCI

Systems & Networking: TCP/IP networking concepts

Tools & Platforms: Git/GitHub, Linux/Ubuntu (command line), SSH, CMake, Jupyter, RStudio, Logisim, Flask, LaTeX