

Tanveen Bal

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EDUCATION

University of California, Irvine

Bachelors of Science in Computer Science and Engineering

Expected Graduation: March 2025

GPA: 3.7/4.0

Coursework: Object-Oriented Programming, Artificial Intelligence, Machine Learning, Data Structures & Algorithms, Software Design, System Design, Data Mining, Computer Networking, Programming Language Paradigms

EXPERIENCE

SimInsights

Software Engineer Intern | C#, HyperSkill

January 2025 - Present

Irvine, CA

- Developing generative AI-powered immersive scenarios by integrating LLMs with XR (Extended Reality) platforms
- Prototyping rapid 3D content generation pipelines using no-code tools such as HyperSkill, enhancing efficiency for education, training, and entertainment use cases
- Collaborating with interdisciplinary teams to address challenges like 3D asset creation, video rendering, and spatial understanding, contributing to innovative XR solutions
- Conducting unit testing and software integration for immersive content delivery, ensuring seamless system performance

Tomorrows AI

Software Engineer Intern | React, HTML, CSS, Python, Vite, AWS DynamoDB

September 2024 - December 2024

Remote

- Contributed to building a responsive, full-stack European media platform leveraging AI for personalized user experiences
- Developed an article recommendation system using SVD and user behavior trends to personalize content delivery
- Developed an API for summarizing news articles with OpenAI LLM, fine-tuned using temperature adjustment, bias detection, and top-k sampling for neutral and concise summaries

USI Networks

Software Engineer Intern | React, HTML, CSS, Python, AWS DynamoDB

July 2024 - September 2024

Fremont, CA

- Built a hardware asset tracking and inventory management system using HTML, CSS, and JavaScript, featuring a serial number search engine that reduced manual tracking time by 40% and improved organization by over 200%
- Utilized AWS DynamoDB database to store and manage asset information, implementing efficient filtering and search capabilities for 10,000+ different items within 20+ categories
- Collaborated with 5 members on the hardware configurations team to define software requirements for the application

RESEARCH

UCI Drone Aviation Lab

Computer Vision & Autonomous Systems Research Assistant

September 2024 - Present

Irvine, CA

- Researching applications of autonomous drone flight in combination with real-time object detection
- Developing an optimized object detection system in C++ using a Raspberry Pi Zero and an AI camera, integrating OpenCV, pre-trained deep learning models, enhancing detection accuracy and computational efficiency
- Designing flight navigation systems that combine AI vision and flight control algorithms for enhanced autonomy

UCI Design and Partnership Lab

Prompt Engineering Researcher


January 2024 - Present

Irvine, CA

- Collaborating with the Chan Zuckerberg Initiative to develop an AI dashboard aimed at evaluating student performance using large language models (LLMs)
- Actively applying advanced prompt engineering techniques, such as few-shot learning and chain-of-thought prompting, to assess student responses on the AUHSD 5 C's performance rubric, targeting an accuracy of 75%
- Contributing to the creation and refinement of approximately 130 domains and subdomains designed to evaluate diverse student skills based on AUHSD performance criteria

PERSONAL PROJECTS

AI Minesweeper | Minesweeper Agent

Python, OpenCV, TensorFlow, PyAutoGUI, Deep-Q Learning 

- Trained a reinforcement learning model on over 300,000 episodes using Deep-Q Networks (DQN) and fine-tuning techniques, achieving high performance in gameplay with only a neural network
- Created an automated agent to control a computer's mouse for Minesweeper gameplay using model predictions

Leksa | Food Social Media Platform

React, Express.js, PostgreSQL, AWS, Expo, Node.js 

- Developed a restaurant discovery/social media mobile app targeting college students as part of an 8-member Agile team
- Engineered full-stack such as restaurant recommender features leveraging PostgreSQL and DigitalOcean for hosting.

SKILLS

Languages: Python, Java, C++, C, C#, JavaScript, TypeScript, GoLang, LISP, Verilog, Embedded C, RISC-V, x86 Assembly

Frameworks & Tools: TensorFlow, PyTorch, CMake, Flask, FastAPI, React, Angular, Express.js, Django, Node.js, Next.js, Selenium, Maven, Jenkins, Figma, Vivado, Arduino, Raspberry Pi, Git, Docker, AWS, Google Cloud, Azure

Technologies: HTML/CSS, RestAPI, Debugging, Redis, Firebase, MySQL, PostgreSQL, MongoDB, Matplotlib, Sci-kit Learn, NumPy, Pandas, OpenCV, Threading, Network Protocols