

Saadan Surhyo

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EDUCATION

University of Wisconsin-Madison

Madison, WI

Double Major - B.S Computer Engineering and Computer Sciences

Expected Graduation: May 2025

- Relevant Coursework: OOP, Data Structures & Algorithms, Operating Systems, DBMS, AI/ML, Agile Methodology, Machine Organization, Computer Architecture, Digital System Design, Microprocessor Systems, Discrete Math

WORK EXPERIENCE

Software Engineer | *SwiftUI, visionOS*

Sep 2024 - Dec 2024

Holos, Inc.

Madison, WI

- Collaborated with a team of 4 engineers to develop an immersive office hours application for Apple Vision Pro, enabling real-time collaboration between students and instructors through spatial computing
- Applied agile frameworks with one-week sprint cycles in coordination with Holos engineers, maintaining 85%+ sprint completion rate and managing feature implementation through Linear
- Architected modular 3D interaction system leveraging RealityKit for gesture-based manipulation (drag, scale, rotate) and model state synchronization across multiple users via SharePlay
- Engineered integration of multi-user collaboration capabilities using GroupActivities framework, achieving seamless synchronization for whiteboard drawings and 3D model interactions across devices
- Designed modular system architecture separating feature components (3D Models, Spatial drawing, PDFViewer, Whiteboard, etc.) into independent modules, enabling efficient feature development and maintenance
- Implemented immersive space management system with visionOS APIs, handling transitions between 2D windows and 3D environments while maintaining consistent user experience across collaboration sessions

PROJECTS

Operating Systems - *UW Madison (CS537 Projects) | C, xv6, Linux*

- Implemented various OS features including system calls, memory management, scheduling policies, and synchronization primitives in the xv6 operating system
- Developed a custom shell supporting pipes, environment vars, and built-in commands using the fork-exec model
- Built an optimized concurrent key-value store server using a thread-safe ring buffer and fine-grained locking
- Created a FUSE-based file system with support for core (CRUD) file and directory operations

Minirel Database Design - *UW Madison (CS564 Project) | C++, SQL, Unix*

- Built a single-user DBMS supporting simple SQL queries to understand query execution and DBMS internals
- Implemented a buffer manager with clock algorithm for page replacement and a hash table for page tracking
- Developed a heap file manager and query processing operators (selection, insertion, deletion) for the DBMS

eBay Auction System - *UW Madison (CS564 Project)*

- Designed a relational schema for a large-scale eBay auction data in JSON format using ER diagrams
- Developed a Python program to transform JSON data into SQLite load files based on the relational schema
- Created and tested a SQLite database with the transformed data, running complex SQL queries for validation

Reddit posts Search Application - *UW Madison (CS400 Project)*

- Co-led a backend team of 8 in the development of an app, that implemented a hash table-based search algorithm to efficiently index and retrieve 1000's of Reddit posts based on specific keywords
- Conducted comprehensive unit testing on 2 team members' code using JUnit to validate the performance of the search app, resulting in a highly reliable and error-free application

Embedded Multiplayer Dino game - *UW Madison (ECE353 Project)*

- Engineered a dynamic multiplayer Chrome Dino game on PSoC6 MCU using FreeRTOS, implementing real-time task management and UART-based player/game state synchronization
- Developed custom drivers to interface with various PSoC6 peripherals including joystick control, IMU-based obstacle dynamics, and light-sensitive display adjustments

SKILLS

Programming Languages: Java, C/C++, Python, Swift, SwiftUI, JavaScript, HTML, CSS, SQL, MATLAB, Bash

Software/libraries/tools: Git/Github, Linear, Jira, SQLite, JUnit, Jupyter, Pandas, PyTorch, NumPy, SystemVerilog/Verilog