AMRAL BAKSH

amralbak@buffalo.edu | github.com/amralbak | linkedin.com/in/amralbaksh16

EDUCATION

University at Buffalo Buffalo, NY
Bachelor of Science: Computer Science, Cybersecurity Minor May 2027
Relevant Coursework: Data Structures, Operating Systems, Computer Architecture, Machine Learning
Awards: Dean's List (Fall 2023 and Spring 2024)

PROFESSIONAL EXPERIENCE & INVOLVMENT

SUNY Buffalo Biomedical Engineering Department | *Research Assistant* | Buffalo, NY May 2025 - Aug 2025

- Integrated an industrial XIMEA camera into a C#-based OCT imaging system, enabling real-time data capture and hardware–software integration
- Built and optimized performance-critical, multi-threaded data pipelines in a GPU-accelerated system, debugging latency, synchronization, and throughput bottlenecks under real-time constraints.
- Configured and synchronized camera, frame grabber, and DAQ systems for high-speed acquisition under real-time constraints
- Worked within a multi-threaded architecture, debugging timing issues and ensuring reliable data flow

SUNY Buffalo CSE Department | *Team Member* | Buffalo, NY Aug 2025 - Present 2025

- Implemented secure device-to-device communication in a distributed system, focusing on correctness, fault tolerance, and low-latency message passing.
- Designed and extended system components involving cryptographic key management, authentication, and message passing
- Integrated publish/subscribe messaging to support reliable, low-latency communication between system components
- Modified and extended an existing codebase to meet new requirements with minimal performance impact

SUNY Buffalo Hackathon | *Team Member* | Buffalo, NY Nov 2025

- Built and deployed backend services for a real-time web application using Flask and Firebase, designing secure APIs, persistence, and low-latency request handling.
- Designed and implemented secure API endpoints for emotion-aware responses, chat history persistence, and external resource discovery, focusing on reliability, privacy, and low-latency user interaction.

SKILLS

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

Systems and Infrastructure: Multithreading, Concurrency, Memory Management, Real-Time Systems, CUDA

Data & Applied Machine Learning: Model evaluation, feature extraction & preprocessing, performance analysis; experience integrating AI models into production services

Tools: Git, Linux, Secure communication protocols, Publish/ Subscribe messaging

PROJECTS

Multi-pool Memory Allocator - Implemented a custom C memory allocator to reduce fragmentation and improve allocation efficiency in performance-sensitive systems.
Conway's Game of Life Implementation- Developed Conway's Game of Life in C with efficient grid updates
Instant Messenger Application – Built a C-based instant messaging app with custom packet encoding and decoding
Personal Portfolio Website – Developed a responsive personal portfolio website using HTML, JavaScript, and CSS