BARIS ALP AYDIN

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EDUCATION

UNIVERSITY OF OTTAWA Ottawa, ON
Bachelor of Applied Science in Computer Engineering Sep 2020 - Apr 2025
Relevant Coursework: Computer Architecture, Data Communications and Networking, Real-Time Systems Design

WORK EXPERIENCE

FREELANCE SOFTWARE DEVELOPMENT Ottawa, ON
Software Developer – OCR Automation Project Sep 2025 – Present
- Developed an OCR-powered screenshot indexing system using Python, PaddleOCR, OpenCV, and Streamlit that automates the extraction and filtering of timestamps from Twitter/X screenshots.
- Built a date/time parsing engine with exact, windowed, and time-range matching for accurate screenshot retrieval.
- Containerized the application with Docker and deployed it on Railway.app for secure and scalable access.
- Currently migrating the system to a FastAPI backend with async OCR, Redis workers, Postgres, and object storage.

UNIVERSITY OF OTTAWA Ottawa, ON
Teaching Assistant in Operating Systems Course May 2024 – Sep 2024
- Assisted a lab section of 20 students and helped them understand and apply complex concepts in operating systems.
- Facilitated lab work involving Ubuntu, C programming, and Java, ensuring students can effectively use these tools.
- Explained topics such as fork() and exec() system calls, process behaviour observation, interprocess communication with pipes and Java threads, semaphore synchronization, and page replacement algorithms.

JOEY RIDEAU Ottawa, ON
Line Cook Jan 2022 – Jan 2023
- Thrived in a fast-paced kitchen setting, enhancing adaptability, critical thinking and problem-solving skills.

PROJECTS

HIKING ASSISTANT VEST
- Collaborated on hardware and software development, focusing on sensor integration and Python data processing.
- Integrated Raspberry Pi 4 with a mobile app using BLE and MQTT protocols for efficient real-time data transmission.
- Configured Raspberry Pi as a BLE peripheral via the d-bus library and developed modular Python scripts for sensor polling, MQTT publishing, and BLE broadcasting, enabling features like step counting and fall detection.
- Optimized BME680 and LSM6SDOX sensor data processing for reliable communication and real-time app display.

SECURITY SYSTEM
- Developed a security system using C, FreeRTOS, and STM32CubeIDE on the STM32 Nucleo-F446RE board.
- Integrated a keypad for passwords, OLED display and LED indicators for system status, motion sensor, and a buzzer.
- Used multi-tasking concepts for real-time responsiveness and quick hardware-software interaction.
- Gained practical experience in real-time systems and embedded systems development.

CUDA SHARED MEMORY OPTIMIZATION
- Optimized CUDA kernels for matrix transpose and parallel reduction using shared memory, padding, and warp shuffling, improving execution time by 2.7 ms over naive implementations.
- Profiled performance with NVIDIA Nsight and resolved shared-memory conflicts through iterative debugging.

SKILLS

Core Programming & Development: Python, C, C++, Java, Bash/Shell, NVIDIA CUDA, FreeRTOS
Networking & Protocols: Knowledge of TCP/IP, HTTP, BLE, MQTT, SDN Design Using Mininet, Wireshark
Tools & Practices: Git, VirtualBox, STM32CubeIDE, Microsoft Office Suite, Visual Studio, Linux, Cursor, Agile/Scrum, SDLC