Sachin Bhat

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Education

University of Illinois at Urbana-Champaign (UIUC) Aug 2021 – Dec 2024

B.S. in Computer Engineering (Honors) *GPA: 3.60/4.00*

- **Relevant Coursework:** Embedded Systems, Distributed Systems, Artificial Intelligence, Computer Security, Operating Systems Design, Algorithms, Data Structures

Experience

Motorola Solutions Plantation, FL

Software Engineer *Jan 2025 – Present*

- Implemented real-time telemetry extraction via radio-side debugger commands for the Intelligent Noise Reduction (INR) DSP block, improving test visibility and reducing debug turnaround by 40%.
- Developing a production-grade, low-power dead mic detection module in C++ with RTOS integration, achieving sub-50ms latency and targeting 95% detection accuracy in critical field scenarios.

NASA - Johnson Space Center Houston, TX

Software Engineering Intern *June 2024 – Aug 2024*

- Designed a fault-tolerant, real-time video streaming system for the Orion spacecraft wireless camera using FFmpeg and Python, optimized for low bitrate and high-latency satellite networks.
- Engineered a custom token-bucket bitrate smoothing algorithm that reduced bandwidth spikes by 90%, enabling stable encoder throughput from 1Mbps to 100Kbps without quality degradation.
- Created a modular cross-platform GUI in Python (PyQt) for real-time encoder tuning (bitrate, GOP, quantization) and diagnostics; encoder settings were versioned and retrieved from a configuration database to support dynamic profile switching and rollback.

SRI International Princeton, NJ

Software Engineering Intern *May 2023 – Aug 2023*

- Prototyped a real-time audio-visual user enrollment system using Python, OpenCV, and the OLIVE SDK, storing voice and face embeddings in a local database (SQLite) and querying them for similarity during subsequent recognition events.
- Integrated deep learning–based face detection into a multi-threaded video pipeline, enabling robust user identification in low light, occlusions, and noisy environments.

Projects

SpeedVista: Real-Time Image Processing Application Android Studio, Java, OpenCV

- Developed an object tracking Android application using Kernelized Correlation Filters (KCF) and real-time foreground/background segmentation to achieve high-accuracy object localization.
- Implemented a custom speed estimation algorithm, achieving 90% accuracy in tracking dynamic objects based on image sequences.

Custom 32-bit Linux-like OS C, x86 Assembly

- Developed a 32-bit operating system kernel from scratch using C and x86 assembly, implementing low-level system components such as interrupt handling, memory segmentation, and privilege level transitions.
- Built a round-robin scheduler to manage task switching between user and kernel modes, and incorporated a read-only file system for handling basic file operations.

Muffled Audio Detection Python, PyTorch, Torchaudio

- Designed an AI-powered real-time audio classification system to detect muffled speech in noisy environments.
- Leveraged Google's YAMNet deep learning model for advanced feature extraction and environmental sound classification, achieving 97% accuracy in classifying clean vs. muffled audio signals.

Skills

Programming Languages: C, C++, Python, Java, SystemVerilog, Assembly (x86)

Tools/Frameworks: FFmpeg, OpenCV, Altera Quartus, Android Studio, Git, JIRA, Linux, Raspberry Pi, ESP32, KiCAD, PyTorch, LangChain