DERIC DINU DANIEL

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EDUCATION

University of Michigan – Ann Arbor   Aug. 2021 – April 2025
Computer Science B.S.E.; GPA: 3.64   *Ann Arbor, MI*
Dean's List, University Honors

Relevant Coursework: Operating Systems, Data Structures & Algorithms, Web Systems, Computer Architecture, Computer Security, Computer Science Theory, Intro to Circuit Analysis, Multivariable Calculus, Linear Algebra

EXPERIENCE

Microsoft   June. 2024 – Present
Incoming Software Engineer Intern   *Redmond, WA*

Bose – Research Division   Jan. 2024 – June 2024
Systems Software Engineer Intern   *Framingham, MA*
- Designed real-time streaming system for multiple mics and sensors using LC3 codec, Qualcomm audio system, and **Bluetooth LE** in a large **multithreaded embedded system** in **C**, supporting 5+ high visibility research projects.
- Enabled ability to run larger ML models on host device (vs headphones/earbuds), multichannel data collection, and high-quality audio recording during music playback and voice calls, allowing for new (upcoming) user experiences
- Researched and presented effects of LC3 codec on quality performance of audio deep learning models using SISDR, STOI, and PESQ metrics in an automated **Python** script.
- Prototyped Bluetooth LE GATT receiver system on Infineon Cypress Microcontroller to enable rapid testing of mic/sensor streaming interface to maximize bandwidth and minimize packet loss.

Siemens   May 2023 – Aug. 2023
Software Engineer Intern   *Troy, MI*
- Managed DB and environment instances in **AWS** using **EC2** and **S3** while reducing development server costs by up to 5% to deploy testing and demo environments.
- Resolved critical bugs in dropdown menus on **C++** server-side code by refactoring with smart pointers, fixing product inconsistency and 8 memory leaks per dropdown interaction.

UM Autonomous Robot Vehicle   Jan. 2023 – Aug. 2023
Software Engineer – Sensors   *Ann Arbor, MI*
- Engineered **ROS** Node (subscribers and ROS Service) using **C++** /**Python** and led team of 6 to produce GPS coordinate processing pipeline from Garmin GPS to provide goal locations from current robot location in Cost Map.
- Wrote **Python** scripts to test encoder accuracy, resulting in diagnosis of faulty hardware and enabling rapid testing.

PROJECTS

Thread Library | *C++, Multi-threading, Mutexes, Condition Variables, Semaphores, Unix*
- Implemented a kernel level **C++** thread library on Unix, handling CPU booting, thread management, management of 50+ CPUs, interrupts, atomicity, and FIFO scheduling order. Designed and implemented spin-locks, mutexes, conditional variables utilizing advanced Unix context management.

Virtual Memory Pager | *C++, Virtual Memory, Page Faults, Process Lifecycle Management*
- Designed a virtual memory pager which managed multiple processes and supported swap-backed and file-backed memory pages (similar to Unix mmap()). Managed process creation, page faults & MMU bits, process forking, process destruction, and swap disk all while supporting copy-on-write.

Multithreaded Network Fileserver | *C++, Boost Library, Threads, Sockets*
- Built a heavily concurrent, crash consistent network fileserver supporting multiple users and nested files/folders.
- Utilized committing writes to enable crash consistency, Boost threads and upgradeable reader-writer locks to optimize for maximum concurrency, and POSIX sockets to enable network communication with clients.

TECHNICAL SKILLS

Languages   : C/ C++ , Python, ARM, x86, HTML/CSS, Javascript/Typescript, SQL
Technologies : Next.js/React.js, Git, gdb, Linux, AWS, Flask, MapReduce, Sockets, Multithreading, Networks
Misc.   : Ableton Live, FL Studio, Adobe Lightroom, Pioneer Rekordbox
Interests   : Music Production/Audio, Consumer Tech, Soccer/Running/Gym