Marvin Jirapongsuwan

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EDUCATION

University of Michigan, Ann Arbor: *Dean's List, University Honors* May 2027
B.S.E. in Computer Science GPA: 3.88/4.0
Relevant Coursework: Operating Systems**,** Data Structures & Algorithms, Web Systems, Computer Security, Intro to Computer Organization

WORK EXPERIENCE

Undergraduate Research Assistant **Ann Arbor, MI**
UM Direct Brain Interface Lab Sep 2024 - Present
- Developed EEG-based BCI applications in C++ for physically impaired individuals to communicate via brain signals
- Implemented error checks and resolved core bugs in AAC-BCI keyboard module, focusing on physical port validation, key selection, and stimulus mapping – reducing flash misalignment, calculation, and hardware failures by 30%
- Enhanced Choice-Making module by adding a stimuli-skipping system, stimulus isolation, and refactoring the image flashing algorithm to improve response time and flexibility

Web Engineer Intern **Bangkok, Thailand**
Delta Dynamics (DDX) Jun - Jul 2022
- Designed prototype website in a team of 3 on Wix with complete UI/UX design and functionality for BMW
- Coordinated and attended client meetings across different divisions to gain insight for enhanced features
- Utilized agile methodology for 2-week sprint workflow to deliver features quickly and efficiently

Data Analyst Intern **Phrae, Thailand**
Wall's Ice Cream, Unilever Apr 2018 - Apr 2021
- Presented and analyzed monthly performance data set of 4 commercial truck routes; compiled orders into 39 graphs and bar charts for optimized route planning, and awareness of external factors
- Shadowed onsite workers' daily delivery through 4 routes containing over 100 stores and $4k+ orders
- Optimized supply chain delivery, storage, and scheduling for the SAP HANA Resource Planning System through onsite research

PROJECTS

Multithreaded Network File Server | *C++, Boost Library, Threads, Sockets*
- Built a heavily concurrent, crash consistent network file server supporting multiple users and nested file/folder structure
- 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

Virtual Memory Pager | *C++, Virtual Memory, Page Faults, Process Lifecycle Management*
- Designed a C++ virtual memory pager managing multiple processes, supporting swap-backed and file-backed pages
- Managed process creation/forking/destruction, page faults, MMU bits, and swap disk all while supporting copy-on-write

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

MapReduce | *Python, Threads, Sockets*
- Implemented Hadoop-like MapReduce Distributed System to process large datasets through TCP and UDP communication
- Devised Manager-Worker model with dynamic task assignment, fault tolerance, and support of partitioned clustered data

Reddit Classifier, Aitah | *React, Python, FastAPI*
- Built Reddit-based classifier using a bag-of-words model, achieving 84% accuracy on 3,000+ posts
- Created single-word probability feature, evaluating 24,000+ words to highlight model biases

Manual EQ Tool, Parrot Producer | *C++, JUCE Library, Digital Signal Processing*
- Spearheaded DAW plugin using JUCE that facilitates EQ for music producers, user-friendly functionality for beginners
- Instant audio processing with GUI, allowing manual tuning of Frequency, Gain, Quality and EQ

Heat Quantity Prediction Website, Feel The Heat | *Python, Flask (Jinja), Folium, Matplotlib, Geopandas*
- Led a Team of 3 to develop a website that displays past, present, and future heat map data of all countries
- Created map visualization backend of 20+ dynamic pages and video presentation to enhance user experience

SKILLS

Languages	C++, C, Python, JavaScript, SQL, Lua, MATLAB
Technologies	React, Next.js, FastAPI, Node.js, MongoDB, MapReduce, Pandas, Google Cloud
Certificates	Google Data Analytics, AI Deep Learning Specialization, Harvard CS50: Intro to Computer Science
Awards	Crimson Hackathon Winner, CS Umich Scholarship, Bronze Medal-ASMO