Darren Dong

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EDUCATION

University of Michigan, Ann Arbor, MI   **August 2022 - May 2026**
Bachelor of Science in Engineering in Computer Science with a Minor in Electrical Engineering
GPA: 3.85/4.0
Courses: Data Structure and Algorithms, Computer Vision, Artificial Intelligence, Machine Learning, Web Systems, Practical Data Science, Advanced Operating System, Natural Language Processing, Computer Security

EXPERIENCES

Keurig Dr Pepper, Frisco, TX
IT Automation Prompt Engineering Intern   **June 2025 - August 2025**
- Designed and implemented AI-driven automation solutions using GenAI platforms like Microsoft Azure to streamline IT workflows, including manual data entry and language translation, improving cost and time efficiency
- Analyzed cross-departmental support processes to identify high-impact automation opportunities, developing and testing proof-of-concept tools that enhanced the speed and accuracy of routine IT services.
- Collaborated in agile development cycles with engineers and product owners through sprint planning, daily stand-ups, and demos, iteratively refining automation prototypes based on real-time feedback.
Presented functional GenAI prototypes and impact analyses to senior IT leadership, influencing future automation roadmaps and delivering scalable AI frameworks spanning multiple IT domains.

PROJECTS

University of Michigan
Network File System   **April 2025**
- Designed and implemented a distributed file system supporting concurrent read, write, create, and delete operations using socket programming, enabling multiple client processes to interact with shared files reliably.
- Employed reader-writer and upgradable locks to maintain data consistency and ensure safe concurrent access under high load, preventing race conditions and deadlocks.
- Developed server initialization and directory structure management routines, including robust error handling, to support persistent file system state and reliable client-server interactions.

C++ Thread Library   **February 2025**
- Built a multithreaded library supporting thread lifecycle management (creation, join, yield, termination) with preemptive scheduling driven by timer interrupts, enabling fair CPU time allocation across multiple cores in a symmetric multiprocessing (SMP) environment.
- Designed and implemented synchronization primitives including mutex locks with priority inheritance and condition variables supporting wait, signal, and broadcast semantics; integrated deadlock detection and prevention techniques alongside RAII-based resource management and CPU affinity guards to ensure safe concurrent access and efficient thread execution.
- Developed robust context switching mechanisms and synchronization protocols within a simulated OS kernel environment, leveraging interrupt handlers for timer and inter-processor interrupts (IPIs), enabling seamless multitasking and providing a scalable foundation for complex parallel applications.

Foundational Search Engine   **November 2025**
- Developed a scalable search engine that crawled extensive web directories using a distributed MapReduce framework, orchestrating parallel processing across multiple worker nodes to efficiently process, index, and manage massive document datasets with fault tolerance through task scheduling, heartbeat monitoring, and dynamic worker reassignment.
- Implemented advanced information retrieval algorithms including Term Frequency-Inverse Document Frequency (TF-IDF) for keyword relevance scoring and PageRank for link-based ranking, significantly enhancing the precision and quality of search results in a dynamic dataset
- Engineered a robust query handling subsystem supporting efficient pagination, caching, and asynchronous API calls, seamlessly integrating web crawling, distributed indexing, and ranking into a unified, high-performance, fault-tolerant information retrieval pipeline.

SKILLS

Programming Languages: C++, Java, Python, JavaScript, HTML, CSS, Dart, SQL, Shell Scripting
Frameworks & Libraries: Git, GitHub, PyTorch, NumPy, Matplotlib, OpenCV, Pandas, Flask (REST API), React (SPA Development), Flutter, Jinja2