Albert Cao

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Education

University of Michigan, BSE in Computer Science - GPA: 3.65 Aug 2022 – May 2026

- **Coursework:** Machine Learning, Distributed Systems, Operating Systems, Web Systems, Cyber Security, Computer Organization, Data Structures and Algorithms, Foundations of Computer Science, Discrete Mathematics

Experience

Software Engineer Intern, Mad4Chip – Sorrento, IT May 2023 – Aug 2023

- Designed and tested five libraries/drivers for different chips (ADC, DAC, EEPROM) for microcontroller classes STM32/ESP32 which were adopted by my supervisor and clients to implement into their own projects
- Created software for microprocessors ESP32/STM32, provided connectivity to the device and enabled transmission of statistical, diagnostic, and remote updates that were used by clients

Activities

Software Engineer, Michigan Mars Rover – Ann Arbor, MI Sep 2024 – Present

- Developed embedded software for the rover using ROS and Cube.IDE to interface with microcontrollers STM32 and I2C
- Wrote and tested 800+ lines of code to control rover functionality and communication protocols
- Collaborated with a multidisciplinary team to integrate tested software for optimal rover performance

Software Engineer, Traders at Michigan – Ann Arbor, MI Nov 2023 – Present

- Integrated quantitative trading problem solving techniques that I learned from professionals at notable companies in competitions and interviews
- Designed, developed, and tested software for quantitative trading games that were used in competitions and conventions
- Taught new members core software development concepts, mentoring them in algorithmic problem solving & interview preparation

Projects

Network File Server Dec 2024

- Designed and developed a sophisticated multi-threaded application featuring fine-grained locking for optimal concurrency and performance
- Leveraged hierarchical file systems, socket programming, and client-server architecture to implement a network file system with seamless file sharing and communication

Memory Manager Nov 2024

- Led a team to design/implement a custom pager for handling page allocation and fault resolution across multiple processes
- Implemented system calls for address space creation, allocation, and destruction, optimizing virtual memory management

Thread Library Oct 2024

- Designed CPU, thread, mutex, and condition variable (CV) libraries for both uniprocessor and multiprocessor environments
- Led a team through designing, development and testing phases to ensure complete accuracy, efficiency, and elegance
- Further enhanced understanding of user-level implementations with standard thread libraries for concurrent programming

Search Engine Apr 2024

- Implemented a replica of the early Google search engine capable of efficiently retrieving and ranking results
- Acquired proficiency in using MapReduce program to perform complex calculations regarding search query relevance

MapReduce Framework Mar 2024

- Designed and developed a MapReduce program replica using distributed systems and concurrent multithreaded programming
- Leveraging sockets and TCP/UDP packets provided smooth and optimized communication between manager/worker threads

Technologies

Languages: C++, C, Python, SQL, JavaScript, HTML, CSS, MatLab