Archana Chandran

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Education

University of Michigan, Ann Arbor   *August 2022 – May 2026*
B.S. in Computer Science, Minor in Business from Ross School of Business   *GPA 3.75/4.0*
Relevant Coursework: Advanced Operating Systems, Distributed Systems, Data Structures and Algorithms, Computer Architecture, Web Systems, Cybersecurity, Discrete Mathematics, Foundations in Computer Science Theory, and Cryptography

Relevant Experience

Amazon   *May 2025 – August 2025*
Incoming Software Development Engineering Intern   *Seattle, WA*

CVS Health   *May 2024 – August 2024*
Security Architecture Intern and Developer   *Hartford, CT*
- Analyzed new security technologies during Proof of Concept (POC) phases, assessing against the NIST framework and devising over 50 architectural artifacts to aid architects in designing key concepts such as Multi-Factor Authentication, Web Application Firewall, Intrusion Detection System, Server and Device Certificate Management, and more.
- Developed and trained a chatbot deploying natural language processing techniques, using Flask and Node.js for backend, PowerBI for data storage, APIs for integration, and Power Automate for task automation.
- Assisted over 300 enterprise and solution architects by use of the chatbot in navigating the Security Architecture's repository of 150+ core control and reference artifacts, reducing search time by over 50%.

University of Michigan College of Engineering   *August 2023 - Present*
EECS 280 Instructional Aide, Student Events Lead   *Ann Arbor, MI*
- Instructed an interactive lab and created engaging lessons on foundational coding concepts such as data structures, object-oriented programming, testing, debugging, and computer science fundamentals for 30+ students each week.
- Designed and organized class-wide comprehensive exam review sessions and events to bolster success of over 1,100 students across 5 sessions per semester, in a total of 20 sessions throughout 4 semesters.
- Achieved innovative and diverse teaching practices and tailored office hours to student needs, resulting in a 20% increase in lab grades during Winter 2024, and a 97% approval rating from lab students across 3 semesters.

Project Experience

User-Level Thread Synchronization Library (C++)   *January 2025 – May 2025*
- Built a 650+ line, interrupt-driven CPU scheduler from scratch, implementing manual context creation and switching with setcontext() and swapcontext(), thread lifecycle management, and timer-based preemption.
- Implemented synchronization primitives from scratch, including a mutex class that implements lock() and unlock() safely with a wait queue, and a CV class that safely implements wait(), signal(), and broadcast() methods.
- Designed an interrupt control mechanism using resource acquisition style guard locks to coordinate shared state among threads, while maintaining 5 global queues and context to safely clean up dynamically allocated memory.

Custom Multi-Threaded File Server (C++)   *March 2025 – May 2025*
- Developed a 1100+ line, robust network communication based file system with file reading, writing, deletion, and creation, implementing key features such as data block management, inode structures, and directory entry handling.
- Leveraged reader-writer locks with C++ Standard Library's shared_mutex to optimize concurrent file accesses, to allow multiple threads to safely read the file system simultaneously while ensuring exclusive access for write operations.
- Boosted server performance by reducing disk I/O operations through prefetching strategies, fine-tuned memory management, and implementing error handling to minimize latency and ensure fault-tolerant operations.

Kappa Theta Pi Life App (Dart, Flutter)   *March 2023 – January 2025*
- Deployed a recognition and gamification feature allowing 80+ users to earn badges based on involvement, leveraging custom data types and algorithms in Dart with Android Studio to ensure efficient performance.
- Integrated 18 Image Asset designs through Figma and connected with Firebase, providing real-time updates on user badge progress and enhancing user engagement, with a 94% satisfaction rating from members across a year.
- Product managed development of the Coffee Chats tracker feature, facilitating communication between Development and Design teams utilizing Agile methods to deliver a tool used by over 90 members for efficient progress tracking.

Skills

Languages: C++, C, Python, Java, JavaScript, CSS, HTML, R, Dart, Swift, x86-64 Assembly, ARM Assembly
Frameworks, Libraries, Tools: Flask, Flutter, PyTorch, TensorFlow, NumPy, Pandas, Firebase, Git, Node, React, Node.js
Technologies: Power Automate, PowerBI, Power Apps, Power Virtual Agents, Azure, UIPath, RESTful APIs, MySQL