Abel Johnson

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EDUCATION

National Institute of Technology Calicut · Calicut, Kerala
Bachelor of Engineering in Electrical and Electronics · *Dec. 2020 – May 2024*

Indian Institute of Technology Madras · Chennai, Tamil Nadu
Bachelor of Science in Data Science and Applications - Foundation Level · *2024 – Present*

EXPERIENCE

Advanced Application Engineering Analyst · June 2024 - Present
Accenture · *Bangalore, Karnataka*

- Designed and implemented scalable microservices and REST APIs, enhancing system performance and reliability.
- Improved security by identifying and resolving vulnerabilities in critical client applications.
- Utilized Java, Spring Boot, MySQL, JUnit, Jenkins, and Docker to develop and deploy robust software solutions.
- Collaborated with cross-functional teams to optimize service availability and transaction processing efficiency.

Undergraduate Research Assistant · Aug 2023 - May 2024
NIT Calicut · *Calicut, Kerala*

- Developed a Python-based optimization algorithm to enhance micro-grid efficiency, utilizing libraries such as NumPy, SciPy, and Pandas.
- Built real-time data visualization tools in Matplotlib to validate and communicate optimization results.
- Simulated and analyzed power distribution using OpenDSS, reducing power losses and improving system resilience.

PROJECTS

Virtual Machine | *C Programming, Makefile* | *Link*

- Built and optimized a custom 16-bit virtual machine (VM) from scratch in C, emulating the architecture of a CPU with memory segments, general-purpose registers, stack pointer (SP), and instruction pointer (IP).
- Designed and implemented a simple instruction set, including mov, nop, and hlt, to simulate the execution of assembly-like operations on a virtual machine.
- Enhanced the VM's efficiency by developing a memory management system that allocates and frees memory dynamically, ensuring stability and preventing issues like memory leaks or segmentation faults.
- Built an instruction mapping system using an opcode table that dynamically determines instruction size and execution, making it easier to add additional opcodes in the future without modifying the core logic.

Inventory Management System (B2B and B2C) | *Java Spring Boot, MVC, JDBC, Rest APIs*

- Built a full-stack application enabling vendors to list products and customers to purchase items online.
- Developed microservices using Spring-boot for vendor and material and integrated with IMS using Rest template.
- Managed database interactions with Spring ORM and performed validations to ensure data quality in database.

Real-Time Gesture Recognition for Mouse Control | *C++, OpenCV, Windows API* | *Link*

- Developed a gesture-controlled mouse system using hand gestures for movement, clicking, and scrolling.
- Optimized Real-Time Hand Tracking: Used computer vision techniques to ensure smooth, accurate hand tracking, even in varying lighting conditions, for a seamless user experience.
- Integrated with Windows APIs for hands-free mouse actions via gestures.

Sha256 Implementation | *C++* | *Link*

- Implemented SHA-256 Hashing Algorithm: Developed a custom SHA-256 hashing function in C++ to compute secure hash values from input strings using bitwise operations and message scheduling.
- Optimized Performance for Large Inputs: Designed an efficient system to handle several Mega Bytes of string and ensure accurate message padding, block processing, and hash generation.
- Interactive Command-Line Tool: Created a command-line tool for users to input strings and receive the corresponding SHA-256 hash value, demonstrating practical use of cryptographic principles.

TECHNICAL SKILLS

Programming Languages: C Programming, C++, BASH, x86 Assembly, Python, Java
Frameworks and Libraries: ReactJS, Pandas, NumPy, Matplotlib
Developer Tools: Linux, Docker, Azure, Git