Nithin Kondabathini

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EDUCATION

Adelaide University <div align="right">Expected Graduation: July 2027</div>
Bachelor of Computer Science (Advanced) <div align="right">GPA: 6.75/7.00</div>

SKILLS

Languages: **C++, Python, JavaScript, HTML/CSS**

Frameworks, Database and Libraries: **React, NodeJS, ExpressJS, MongoDB, NumPy, Pandas**

Testing and Development: **Git, Cmake, Docker, Kubernetes, Shell Scripting(Shell and BatchFile)**

PROJECTS

Nand2Tetris: Jack Compiler — C++17, CMake, Python, Shell Scripting(Shell and BatchFile)

- Built a four-stage engine (**Tokenization to Code Gen**) that mirrors production compilers with a **fail-fast philosophy**—catching syntax and semantic errors early through a robust **AST** and **Global Symbol Table** registry.
- Engineered a **multi-threaded pipeline** achieving **100,000 lines/sec** and by leveraging **zero-copy string processing** and a **zero-allocation** strategy to minimize memory overhead during parallel file processing.
- Developed a companion **Python and D3.js** suite to provide interactive **AST** rendering and real-time **Symbol Table** inspections for advanced debugging.
- Automated the end-to-end build process using **CMake and GitHub Actions**, delivering **statically linked native binaries** for **Windows, macOS, and Linux** with automated versioned releases.
- Authored cross-platform **Shell and Batch scripts** to automate dependency management and environment configuration when the compiler is installed, enabling **global terminal access** to the compiler on Windows, macOS, and Linux.

Crypto-Hunter: Real-Time Analytics Dashboard — NodeJS, ExpressJS, MongoDB, React, HTML/CSS

- Engineered a **Full-Stack** cryptocurrency dashboard using **React** and **Node.js**, utilizing **MongoDB** for **user data storage** to persist personalized watchlists and account preferences.
- Integrated **Firebase Authentication** to support **Google OAuth** and secure login flows, ensuring protected, cross-session access to user-specific data.
- Optimized application data flow with **React Context API** to manage **global state**, enabling real-time **CoinGecko API** synchronization and multi-currency localization (USD/INR).
- Developed interactive historical price charts using **Chart.js** with **React Hooks** to ensure high-performance rendering and responsive market volatility analysis.
- Deployed the production application on **Netlify** with a mobile-first **Material UI** design, featuring optimized search filtering and an automated **CI/CD** deployment pipeline.

Huffman Compressor — C++17, CMake, Shell Scripting(Shell and BatchFile)

- Developed a high-performance lossless compression utility using **Huffman Coding** with $O(n \log n)$ complexity for optimal prefix-free tree construction.
- Engineered a custom **bit-packing engine** with bitwise manipulation and padding offset logic to pack variable-length codes into raw binary streams.
- Architected a **cross-platform CI/CD pipeline** via **GitHub Actions** to automate optimized binary builds and installation tests for Windows, macOS, and Linux.
- Implemented a **global toolchain installer** (Shell/Batch) to provide a "one-command" setup for universal CLI access, mirroring industry-standard compiler distribution.

COMMUNITY INVOLVEMENT

PASS Leader (Peer Assisted Study Sessions) — *University of Adelaide*

- Facilitated collaborative study sessions for undergraduate students, guiding peers through **Electronic Systems**, **Statistical Modeling** and **OOP** course material.

Member — *Adelaide Competitive Programming Club*

- Engaged in weekly workshops focused on **data structures** and **algorithmic problem-solving**.
- Collaborated in **teams of three** to solve complex logic and math-based problems under time constraints.