Benjamin Babu

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Education

University at Albany May 2026
M.S. in Computer Science *GPA: 3.85/4.0*
University at Albany May 2025
B.S. in Computer Science, Minor in Informatics *Summa Cum Laude*

Skills

Languages: Python, Java, SQL, C, C#, HTML/CSS, JavaScript, LaTeX, MATLAB
Tools: Git/GitHub, Unix Shell, VS Code, IntelliJ CLion/PyCharm/IDEA, Atom
Frameworks: React, Node.js, JUnit

Projects

Computer Processor Simulator | *Java, Git, VS Code* Jan 2024 - May 2024

- Developed core components including an Arithmetic Logic Unit, registers, memory management unit, and instruction decoder to accurately simulate a processor's functionality
- Integrated a clock cycle mechanism to simulate the timing of instruction execution, ensuring realistic operation of the processor
- Conducted rigorous testing and debugging to ensure the simulator's accuracy and reliability, using both predefined test cases and dynamic input scenarios

AWK Interpreter | *Java, Git, VS Code* Aug 2023 - Dec 2023

- Designed and implemented a custom AWK interpreter using Java, enhancing understanding of language parsing and interpretation techniques
- Developed a lexer and parser from scratch to tokenize and analyze AWK scripts, ensuring accurate command execution
- Implemented core AWK features such as associative arrays, built-in functions, and user-defined functions to achieve full language support
- Conducted comprehensive testing with various AWK scripts to validate the interpreter's correctness and robustness

Personal Website | *React, CSS, Git, VS Code* Dec 2022

- Demonstrated ability in building a responsive and user-friendly web interface
- Created a portfolio section to showcase projects and skills in a visually appealing manner
- Ensured a seamless user experience across various devices by implementing responsive design principles

Experience

University at Albany | *Research Assistant* May 2024 - Aug 2024

- Enhanced documentation for Shank, a research-based custom programming language, improving clarity for future contributors and users
- Contributed to the semantic analysis phase of Shank's compiler, ensuring correct interpretation of language constructs
- Designed and implemented a lexer, parser, and interpreter for Tran, a new custom language, using formal grammar rules to support syntactic and lexical analysis
- Collaborated with research team to improve language design choices and structure

Institute Electrical Electronics Engineers | *Manager of Computer Society* Jan 2024 - May 2025

- Helped create and carry out plans to promote computer science within the organization
- Organized events and activities to engage members and share knowledge about technology and programming
- Worked with other team members to grow the Computer Society and support student involvement
- Planned and hosted multiple hackathons to give students hands-on experience with coding, teamwork, and real-world problem solving