Justin T. Hutchins

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Education

University of Michigan, Ann Arbor, MI
Class of 2022, Honors Program
Intended Major: L.S.A. Computer Science, B.S.
Current G.P.A.: 3.5 / 4.0
Relevant Coursework: Data Structures and Algorithms, Programming and Data Structures, Elementary Programming Concepts, Introduction to Computer Organization, Discrete Mathematics, Introduction to Statistics and Data Analysis, Honors Calculus 1, Honors Calculus 2
Skills: C++, C, PHP, HTML, AngularJS, Javascript, MySQL, Python, R, Git, Linux/Ubuntu

Projects

Library System **May 2020**

- Built an online library system with user accounts, book management, and search functionality. Users can create and delete their account and administrators can add or delete books in the catalog.
- Uses object-oriented PHP for APIs and interfaces, MySQL for storing user and book information, AngularJS for displaying books and fetching data dynamically, HTML for static elements, and CSS for styling.
- Relies on an internal API for searching the library database and utilizes an external public API for getting book information when adding new books.

Pipeline Processor Simulator **April 2020**

- Simulated a six stage, eight register pipeline processor with an instruction and data cache that runs 32-bit assembly instructions based on the ARMv8 assembly language.
- Used data forwarding to resolve data hazards and speculate and squash to resolve control hazards, using methods such as predicting always taken, always not taken, forward not taken and backwards taken, a one bit global predictor, and a two bit global predictor. Returns the optimal branch prediction method that minimizes the number of cycles per instruction of the program.
- Given a cache size, determined the optimal block size, number of blocks per set, and set-associativity for both the instruction cache and data cache to maximize their respective hit rates during the lifetime of the program.

Coordinate Path Finder **December 2019**

- Calculated time efficient, near-optimal and optimal solutions to the Traveling salesman problem (visiting given coordinates and returning to the starting point) using algorithms and heuristics such as Arbitrary Insertion, Nearest Neighbor, and Branch and Bound.
- Utilized Prim's and Kruskal's algorithms to produce Minimum Spanning Trees that connected over 10,000 unique coordinates under constraints.

Extracurricular Activities

Michigan Hackers at the University of Michigan
Security Team Lead, April 2020 - Current
Core Team Member, January 2019 - April 2020

- Joined the Security Team, working with 15+ other members to learn and practice security concepts in the Linux environment.
- Worked with the Interviewing Director to gain practical interviewing experience, as well as insight into the application and interviewing processes of large tech companies.
- Demonstrated passion and commitment to become an official Core Team Member for the most influential computer science based student organization on campus.

Video Game Music Club at the University of Michigan
General Member, September 2019 - Current

- Led discussions of important concepts relating to the composition and purpose of video game soundtracks with a group of 20+ student members.