Jason Yi

(336) 693-1206 | j.hyonyi@gmail.com | LinkedIn | GitHub | Website

Education

University of North Carolina at Chapel Hill — Chapel Hill, NC
Bachelor of Science in Computer Science, Statistics and Analytics — *Aug. 2022 – May 2026*

- **Coursework**: Distributed Systems, Operating Systems, Machine Learning, Algorithms, Data Structures, Databases, Models of Languages and Computation, Computer Organization, Stochastic Modeling, Probability
- **TA**: Algorithms (Spring 2025), System Fund. in C (Fall 2024), Data Structures in Java (Fall 2023, Spring 2024)

Technical Skills

Languages: C/C++, Python, Java, TypeScript, JavaScript, HTML/CSS, Assembly, Swift/SwiftUI
Frameworks/Libraries: React.js, GraphQL, Angular, Node.js, PostgreSQL, NumPy, Pandas, Matplotlib, JUnit
Developer Tools: VSCode, Git, GitHub, Vim, Jira, Jenkins, Splunk, IntelliJ, Linux Kernel, AWS, XCode

Experience

NSF RTG Networks | UNC Statistics Department — Sep. 2024 – Dec 2024
Undergraduate Research Assistant — *Chapel Hill, NC*

- Advised by Dr. Chudi Zhong to develop **Interpretable Machine Learning** algorithms/pipelines by refining models such as Decision Trees and Generalized Additive Models to ensure better decisions in high-stakes situations
- Optimized the TreeFARMS algorithm in **C++** and **Python**, reducing runtime by **20%** through parameter tuning and tree depth constraints, enabling faster enumeration of almost-optimal **Decision Trees**

Fidelity Investments — June 2024 - Aug. 2024
Software Engineer Intern — *Durham, NC*

- Developed Backend services in **GraphQL** via **Experience API** for Account Opening which impacts **50+ million users**, and Frontend services in **Angular and TypeScript** for Crypto IRA
- Implemented customer info, address validation, and risk analysis services to prevent user fraud or illegal activity during account opening using **TypeScript and GraphQL** by matching data from multiple downstream APIs
- Established excellent code quality and performance through unit testing via **Mocha, Splunk, and NestJS**

CS+Social Good — Jan. 2023 – Dec 2023
Full Stack Developer — *Chapel Hill, NC*

- Collaborated with CATCH (Carolina Adapts Toys for Children) to develop a user-friendly and responsive platform to support their mission of adapting toys for children with special needs using **React, Firebase, UI/UX Design**
- Improved user navigation with a fixed Navbar and essential functions for efficient data management

Projects

CQLite | *C, Ruby, RSpec, Bash*

- Built a persistent **B-Tree** database engine in **C** by modeling **SQLite's** internal structure, supporting **O(log n)** key lookup, in-order traversal across leaf pages, and dynamic splitting of internal and leaf nodes
- Implemented page-level memory management and cursor-based traversal, enabling range queries, recursive visualization, and structural correctness across **50+** randomized inserts
- Wrote **15+** integration tests in **RSpec** using pseudorandom insertions to validate structural integrity and performance, successfully printing balanced B-Trees with **7+** leaf nodes and multiple internal layers

CC Compiler | *C++, LLVM, GNU Bison, Flex*

- Built a custom toy programming language compiler in **C++** using **GNU Bison** for parsing and **Flex** for lexical analysis, generating an **Abstract Syntax Tree (AST)** and transforming it into **LLVM IR** code for execution
- Walked over the **AST** to generate byte/machine code for each node, and integrated **LLVM** to compile and execute the generated code, utilizing **llvm-config** for streamlined builds and testing

Restaurant-Finder | *PostgreSQL, Express.js, React.js, Node.js (PERN Stack)*

- Developed a **full-stack website** for Creating, Retrieving, Updating, and Deleting restaurants and reviews
- Maximized data efficiency by **utilizing dual Postgres tables** for managing restaurant and review data
- Improved component data retrieval to automatic and minimized prop drilling by **utilizing Context API**