Michael Xie

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EDUCATION

University of Maryland, College Park
Bachelor of Science in Computer Science, Bachelor of Science in Mathematics — GPA: **3.82/4.0**, Expected May 2024
Masters in Computer Science — May 2025
Presidential Scholarship Recipient
Deans List Fall 2020-2024, Spring 2021-2024

WORK EXPERIENCE

Hughes Network Systems — **May 2023 – August 2023**
Software Engineer Intern | Python, Mininet, C, Linux — *Germantown, MD*
- Worked within a team to test the feasibility of BBR2 congestion control algorithms on IPG's and its interaction with current proprietary software.
- Created Python scripts within Mininet in order to emulate a variety of network scenarios and glean insights into the performance of BBR2.
- Modified C source code in the Linux kernel from standard AQM algorithms to proprietary software, increasing accuracy of the model and thus allowing for more relevant results.
- Defined parameters of BBR2 model and increased average throughput over a two-minute interval while maintaining similar delay compared to traditional congestion protocols such as cubic or reno.

University of Maryland, College of Material and Natural Sciences — **January 2023 – May 2023**
Teaching Assistant | C, Assembly, Unix — *Gaithersburg, MD*
- Worked as a teaching assistant during the Spring 2023 semester for CMSC216, Introduction to Computer Systems, a course designed to introduce students to basic operating system and hardware concepts.
- Held weekly office hours, aiding students struggling to understand course materials and assisting them in debugging their projects.

Hughes Network Systems — **May 2022 – August 2022**
Software Engineer Intern | Python, Netfilter, Iptables, Wireshark — *Germantown, MD*
- Worked within a small team to implement a MASQUE proxy prototype to effectively proxy traffic running over a QUIC network.
- Developed client side and server side interfaces to bookkeep and manage multiple concurrent connections using Python .
- Used tools such as netfilter/Iptables to manage the data and control planes of the proxy.

PROJECTS

NBA Player Prop Projections with Monte Carlo Simulation
- Automated data scraping of a particular NBA player's relevant statistics
- Used a linear regression model adjusting for opposing team strength and normalizing with R^2 coefficients
- Achieved 65% accuracy when predicting whether to bet the over or under for these players, well over implied odds line of ~52%

Predicting Heart Failure
- Collected and curated a sample of 50,000 responses from the 2020 annual CDC survey related to health status. Fields included values such as BMI, age, whether they smoke, diabetes, etc.
- Created Bayesian, decision tree, and neural network models to predict heart failure based on input vector, as well as determine what factors were most/least conducive to heart failure.
- Reached upwards of 85% accuracy with neural network model by tuning hyperparameters.

Sampled Suffix Arrays with Minimizers
- Implemented minimizer-based sampling scheme to create sampled suffix arrays as a full text index.
- Implemented and compared build time and query time results for a variety of minimizer schemes including lexicographical, hash-based, and frequency based, as well as hyperparameters window size and minimizer size.
- Attained similar performance with traditional dense suffix arrays while using ~58% of the space

Other projects: **Racket-based Interpreter and Compiler**, **Clash Royale Data Visualization**

ACTIVITIES & VOLUNTEERING

- **CMSC 4xx Peer Tutor**, University of Maryland: Paid peer tutor aiding students in understanding computer science concepts in numerous upper-level courses, allowing students to gain a greater understanding of course materials.

SKILLS & FRAMEWORKS

Python, Java, C, HTML/CSS, React, Node.js, MATLAB, R, Racket, OCaml, Git, SQL, MongoDB, Vim, Express, Rust

RELEVANT COURSES

Algorithms I & II | Machine Learning | Data Analysis | Numerical Methods | Artificial Intelligence | Linear Algebra | Differential Equations | Applied Statistics I & II | Advanced Calculus I & II | Discrete Structures and Mathematics | Computer Systems | Advanced Data Structures | Design and Analysis of Algorithms | Compilers | NLP |