
EDUCATION

Computer Science, University of North Carolina at Chapel Hill [4.0 GPA, Dean's List] Class of 2025

- National Merit Scholarship Recipient, Honor Societies: Phi Beta Kappa, Upsilon Pi Epsilon
- Publications: [Demystifying NVIDIA GPU Internals to Enable Reliable GPU Management](#), Proceedings of the 30th Real-Time and Embedded Technology and Applications Symposium (RTAS). May 2024.
- Awards: listed on Jane Street puzzle leaderboard for 10/2024 (best entries section) and 09/2024, top 5% in Meta Hacker Cup 2024, awarded prize in Lucid Programming Competition 2024
- Relevant Coursework: COMP 541 (Digital Logic and Computer Design), COMP 455 (Models of Languages and Computation), COMP 550 (Algorithms and Analysis), MATH 535 (Introduction to Probability)

EMPLOYMENT EXPERIENCE

Software Development Engineer Intern, Amazon Web Services, Bellevue, WA May — Aug 2024

- Added support for read-only instances to [AWS RDS Data API](#), developed and tested [load-balancing heuristic in Java](#) to ensure [efficient, low-latency distribution](#) of queries across instances, [drafted complex technical documentation](#) that was shared extensively within RDS Data API team to enable smooth project handover
- Ran [simulations and benchmarks](#) of performance characteristics for different load-balancing methods (indicating more complex methods perform no better than round robin), evaluated different API [user experience designs](#) for ease-of-use, completed feature implementation in [Java](#) along with substantial [unit and integration testing](#)
- Project has potential to [increase Data API performance by up to 16x](#) for read-heavy workloads, improves feature parity with other AWS RDS products, and is on-track to reach production in 2025, [received full-time return offer](#)

PROJECTS

Jane Street Real-Time Market Data Forecasting Kaggle Competition

- Participated in the Jane Street Real-Time Market Data Forecasting Kaggle competition, which focused on training and utilizing predictive models to estimate market outcomes based on market data
- Employed [preprocessing](#), including applying transformations to input vectors and handling missing values, in order to improve reliability and provide higher-quality inputs to the model
- Utilized numerous [regression and ML heuristics, including gradient boosting models, random forest approaches, neural networks, linear regression, and polynomial regression](#), for accurate predictions of complex market data
- Employed an [ensemble approach \(multiple different sub-models\)](#) for accuracy and less risk of catastrophic error
- Utilized [Pandas, Polars, Numpy, and SciKit-Learn](#) to train and run model
- Contest is ongoing, so final results are not available yet, but current model rank is competitive, demonstrating a high level of skill in predictive modeling and analysis of market data

Mobile App for *The Daily Tar Heel*

- Worked with largest university newspaper at UNC to convert newspaper website into mobile app, [communicated trade-offs of technical design options to a non-technical \(newspaper staff\) audience](#)
- Developed and published mobile app (published to closed alpha test track) using [C#/ .NET Multi-Platform App UI](#)
- Project will [increase ad revenue](#) since most ad-blocker tools only work with websites, not standalone mobile apps, and, according to *Daily Tar Heel* staff, the app is also [faster and more responsive](#) than the original website

ADDITIONAL INFORMATION

Technologies and Tools: Python, Pandas, Polars, Numpy, SciKit-Learn, C, C++, Assembly, FPGAs, Verilog, SystemVerilog, Java, C#, Linux

Interests: Elected student government roles, undergraduate research

Additional Reading and Courses: Introduction to Algorithms (CLRS), Option Volatility and Pricing, Akuna Options 101