RAHUL RAMESH

480-278-1794 | rmsh@umich.edu | linkedin.com/in/ramesh-rahul

EDUCATION

University of Michigan-Ann Arbor — Ann Arbor, MI
M.S., Computer Science and Engineering — Aug 2024 – Present

Duke University — Durham, NC
B.S., Computer Science; B.S. Mathematics; Education Minor (3.70 GPA) — Aug 2017 – May 2021

WORK EXPERIENCE

Capital One — McLean, VA
Software Engineer — Jan 2024 – Aug 2024
Associate Software Engineer — Aug 2021 – Dec 2023

- Constructed Java-based Kafka consumer service to generate customized payment plans for customers in debt recovery (22,000+ new enrollments, Capital One Circle of Excellence award)
- Created Python library to automatically generate and tailor collections test accounts for live dependency testing. Led design of concurrency model with DynamoDB-based optimistic locking to atomically retrieve, test, and reset accounts (20+ dependent services, 10,000+ accounts)
- Parallelized Java Spring microservice architecture for calculating collections offers based on user-submitted hardship surveys. Adapted for agent dial-in and web self-service experiences. Coordinated end-to-end testing, monitoring of new offers (10,000+ enrollments, 2x performance improvement)
- Refined rules logic and other Restful API integrations for collections offer associated with No Preset Spending Limit customers (200+ enrollments)
- Streamlined legacy Java-based data publishing pipeline with AWS lambda (100+ internal customers)
- Migrated internal dataset registration GraphQL codebase to AWS lambda, incorporated with React front end (1000+ weekly internal customers)

Capital One — McLean, VA
Technology Intern — Jun 2020 – Aug 2020

- Collected user click-through data with Snowflake on Elasticsearch-based internal API search engine (10,000+ clicks tracked)
- Wrote Python-based pipeline to procedurally train RankBoost machine learning model to improve search relevance ranking. Created Tensorflow-compatible API to extend model with the Learning to Rank plugin (50+% improvement on F1 score)

Tanium — Morrisville, NC
Software Engineering Intern — May 2019 – Aug 2019

- Wrote Python library for translating Windows Permission descriptors into human readable formats, memoized in a SQL db. Integrated library into React-based Integrity Monitor platform for tracking changes in file permissions (800+ customers)

Quantifying Gerrymandering Group, Duke University — Durham, NC
Bass Connections Researcher — Jun 2018 – Apr 2019

- Originated graph-theoretic algorithm to generate random districting plans using weighted spanning tree-based proposals for Markov Chain Monte Carlo (MCMC) sampling using C++ (100,000+ plans per ensemble)
- Scraped 10+ years of precinct-level election data for North Carolina House and Senate elections. Compared outcomes from enacted plans against simulated elections on randomly generated ensembles of plans to evaluate the extent of gerrymandering
- Proposed new metric for evaluating random maps by calculating differences in vote fractions along district borders. Prepared evidence of 50% observed partisan skew in an amicus brief for 2019 NC Supreme Court case *Common Cause v Rucho*

SKILLS

Languages: Python, Java, C, C++, SQL, MATLAB, R, React.js
Technologies: Java Spring, RESTful API, PostgreSQL, SQLAlchemy, Snowflake, Maven, Jenkins, Docker, Splunk, New Relic, Svelte, AWS (Solutions Architect certificate), TensorFlow, Pytorch
CS Coursework: Data Structures, Algorithms, Machine Learning, Operating Systems, Computer Architecture, Software Design
Math Coursework: Linear Algebra, Real Analysis, Abstract Algebra, Advanced Probability, Mathematical Sampling