Arjun Aggarwal

arjunagg@umd.edu +1 (571) 286-1141 in/arjunaggarwal1 github.com/arjunaggarwal03

EDUCATION

University of Maryland

B.S. Computer Science and Mathematics • GPA: 3.8 • Expected: May 2025

• **Relevant Courses:** Algorithms I & II, Object-Oriented Programming I & II, Discrete Structures, Intro to Data Science, Computer Systems, Linear Algebra

EXPERIENCE

Bank of America

Software Engineering Intern **June 2023 - August 2023, Jersey City, NJ**

• Automated Alteryx risk modeling workflows with Python, SQL, and Apache Hive, reducing run time by 85% for 5000+ credit/compliance tests.

• Implemented Python-based integration of workflow apps with Bitbucket Server API, addressing source control inefficiencies for 750+ analysts and achieving 70% reduction in check-in time using modules such as requests.

• Developed test detail microservice using Spring Boot, OpenShift, and Java 8, reducing legacy code usage by 15% and improving system maintainability by streamlining testing processes.

Capital One

Software Engineering Intern **January 2023 - April 2023, College Park, MD**

• Leveraged Apache Spark to prepare efficient pipeline for querying Capital One card data (volume of 900M edges), enabling faster risk detection

• Reorganized and converted graph data into Apache Spark GraphFrames, leading to a 6x speed improvement (median) in node neighbor queries.

• Conducted 80 cloud-based trials with varying RAM/storage metrics to validate results; presented performance improvements to stakeholders.

• Collaborated in agile manner to develop new features and ensure optimal system performance, participating in 100% of scrum meetings.

University of Maryland Quantum Machine Learning Lab

Research Intern **May 2022 - July 2022, College Park, MD**

• Trained a signal classifier for CERN Large Hadron Collider data using TensorFlow to detect noise with 93% accuracy (4% boost over old model).

• Optimized performance by 15% by plotting learning curves using Matplotlib and tuning hyperparameters such as learning rate and batch size.

• Improved accessibility and portability of TensorFlow-based signal classifier by hosting it in a Jupyter Notebook, leading to 30% increase in team usage.

Glimmr (Student Startup)

Junior Software Engineer **August 2021 - February 2022, Charlottesville, VA**

• Improved test coverage of main application to 88% by writing 75+ unit/integration tests using Jest and enforced code standards using Prettier.

• Contributed to development of a complex web application, applying agile practices (code reviews, git branching, etc.) to 1K+ lines of code.

• Redesigned 10+ web components, adding various metrics (device width, text size, etc.) to match Figma wires with JavaScript, React, and SASS.

PROJECTS

Unix-like Command Line Shell in C

• Developed a basic Unix-like command line shell in C that handles simple boolean operations, pipes, and file redirection.

• Tokenizes command line input, converts tokens into a tree data structure, and traverses the tree to execute.

• Created a makefile to expedite the executable building process by establishing various dependency rules.

Paraphrase-based Text Search Web App

• Developed a web app that searches through text with a paraphrased search key at BitCamp, a UMD hackathon.

• Identified semantically similar sentences by running user input through an open-source semantic analysis model.

• Created front-end using Python and Jinja2 templates to display results accessed via Flask endpoints.

YOLOv3-based Vehicle Parking Pass Detector

• Trained YOLOv3 Object Detection model capable of detecting vehicle parking passes with 96% accuracy.

• Integrated Google Cloud Vision API optical character recognition system to detect pass identification numbers.

• Designed and developed a real-time visualization of a parking lot for school administration using Flask endpoints and an HTML/CSS front-end.

SKILLS

Languages: Python, Java, C/C++, OCaml, JavaScript/TypeScript, SQL, HTML/CSS
Other: Git, React, Flask, JUnit, Docker, Linux, Apache Spark, Spring Boot