Mustafa Muhammad

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EDUCATION

York University — Toronto, ON
*Bachelor of Arts in **Computer Science**. GPA: 7.6/9.0* — *Aug. 2019 – Dec. 2022*

TECHNICAL SKILLS

Languages: Python, Java, C, Shell, SQL, HTML/CSS, JavaScript
Frameworks: Flask, JUnit, Android, Selenium, Bootstrap, Spring
Developer Tools: Git, Docker, Jenkins, OpenShift, Oracle DB, MySQL, Linux

EXPERIENCE

Data Science Intern — May 2021 – Dec 2021
Canadian Imperial Bank of Commerce (CIBC) — *Toronto, ON*

- Refactored our main machine learning batch models from Jupyter notebooks into python scripts and created data pipelines.
- Developed web scrapers to scrape publicly available data on medical professionals in Canada with an automated pipeline using Jenkins.
- Created custom Oracle Instant-Client and Sphinx docker images for Red Hat Enterprise Linux from scratch based on CIBC's security directives and deployed both onto an OpenShift Kubernetes cluster.
- Decreased training time by 90% for our ATM cash allocation models by refactoring code to run in parallel using the multiprocessing library in python.
- Analyzed various in and post processing bias mitigation algorithms as part of an AI fairness workstream and implemented decision tree flowcharts and pseudocode for explainability.
- Explored and implemented privacy enhancing techniques such as differential privacy, membership inference attack and homomorphic encryption for deep neural networks using Tensorflow and Pytorch in a Vector Institute organized bootcamp.

Assistant Programmer — Feb. 2021 – Apr. 2021
Lassonde School of Engineering — *Toronto, ON*

- Web scraped York course website for courses and their dependencies using Selenium web-driver.
- Handled unstructured web data by partial string matching and regex.
- Cached scraped results in SQLite database to reduce number of requests and save 40% of total runtime.
- Created a command line interface with options to load, save, update, delete and add courses.

Software Engineering Intern — Aug. 2020 – Dec. 2020
Bazaar Technologies

- Redeveloped login flow for the Bazaar android app with 2 factor authentication via OTP.
- Implemented abandoned cart notifications, to notify users if cart is full and no order is placed.
- Developed web api's using spring boot (Java) to fetch product details and create orders.
- Designed a slack bot to query our MySQL database for key performance indicators and post on our slack channel using AWS lambda periodically every 30 minutes.

PROJECTS

Movie Recommendation web app | *Python, Flask, scikit-learn, HTML, CSS (Bootstrap)*

- Developed Full stack machine learning web app, to recommend movies based on cosine similarity metric.
- Implemented multi threading, a priority queue and result caching to bring search time to less than 3 seconds.
- Dockerized and deployed on Heroku.

Ray Tracing Animation Engine | *C, Python, PyPy*

- Implemented the ray tracing rendering algorithm to simulate the effect of light on reflective spheres and combined the rendered HD images into an animation.
- Orignally built using the PyPy Just-In-Time (JIT) compiler with multiprocessing to make use of all cpu cores for optimal performace.
- Re-engineered the entire logic in **C** to observe performance gains of **8x** over python.
- Implemented UV mapping to project a 2d texture onto the surface of the 3D spheres.