Mohamed Harmanani

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http://harmanani.com

Education

University of Toronto — Toronto, ON

Honours Bachelor of Science (Computer Science Specialist) — Sep. 2016 – Nov. 2021

- Annual GPA: 3.80 / 4.00; CGPA: 3.39 / 4.00
- Relevant Courses: Databases, Numerical Analysis, Neural Networks & Machine Learning, Cognitive Science

Experience

Machine Learning Research Intern — May 2021 – Aug 2021

Department of Computer Science, University of Toronto — Toronto, ON

- Researching the implementation of Deep Learning models for understanding Computer Science students' code, and provide feedback on bugs and code quality

Bioinformatics & Data Science Intern — Sep 2020 – May 2021

Braeutigam Lab, University of Toronto — Toronto, ON

- Designed a pipeline for transcript assembly and biological sequence analysis using **bash**, **Python**
- Developed tools to clean, assemble, and align RNA transcripts, using **FastQC, Trinity, Hisat2**, and **BLAST**
- Wrote **Python** scripts to extract insights from over 6TB of transcript data, such as alignment frequency and average transcript length
- Resolved data processing bottlenecks by parallelizing running processes
- Presented reports of summary statistics and technical requirements for each step in the data analysis pipeline

Software Engineer — Sep 2020 – Dec 2020

Groupme.ca — Toronto, ON

- Conducted user research in the form of surveys & interviews, and identified key areas of user interest
- Implemented a recommender system to match students using **React** and **Redux**, achieving 89% precision
- Developed Sign In and Sign Up flows with secure authentication using **MongoDB** and **JWT**
- Implemented responsive pages and UI components using **React**, **CSS** to make the site accessible on all devices
- Created a fully specified REST backend built with **Node.js**, **Express.js**, and **MongoDB**
- Performed frequent product tests to diagnose issues, and reduced number of bugs in production by 60%

Software Engineer Intern — May 2019 – May 2020

Venngage — Toronto, ON

- Developed probabilistic algorithms for layout generation, increasing design quality metrics by 20%
- Optimized the icon searching feature using **React**, improving performance and reducing search times by 200%
- Implemented data tracking tools using **Mixpanel**'s API, and analyzed user data to diagnose performance issues
- Addressed performance issues in the proprietary slides manager, significantly reducing loading times
- Implemented user flows, responsive landing pages, and various UI components with **React**, **Redux**, and **CSS**
- Helped over 250 users by collaborating with customer support to resolve reported issues in real-time
- Automated UI testing with **JavaScript** and **Cypress** to cut down testing time in half ahead of release

Technical Skills

Programming: Python, C, Java, bash, SQL, JavaScript, React.js, Node.js, PHP, HTML, CSS
Technologies: PyTorch, scikit-learn, NumPy, SciPy, pandas, Unix/Linux, Git, MySQL, PostgreSQL

Projects

Shoe Pair Image Classifier | *Python, PyTorch, torchvision, matplotlib*

- Implemented a convolutional network in **PyTorch** to determine if two shoes belong to the same pair or not
- Built and trained different model configurations to determine the best architecture for modelling the data
- Wrote a customized training loop from scratch and effectively tuned the hyperparameters with grid search
- Achieved a final testing accuracy of 80% for men's shoes and 88% for women's shoes

Data Science Job Market Analysis | *Python, NumPy, matplotlib, Seaborn, pandas*

- Performed exploratory data analysis of the job market for data-related positions using **Python**, **pandas**
- Used data visualization to extract valuable insights such as the number of job openings, the expected compensation, and the required skills to land a job
- Wrote and published a report summarizing the insights and conclusions of the project