Jay Mody

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Skills

Languages
Python • C/C++ • Java • JavaScript • HTML/CSS

Tools
NumPy • Tensorflow • OpenCV • PyTorch • SKLearn
Unix • Git • Bash • Batchfile • GCloud • Azure • SQL
Flask • Dash • LaTeX • SWT • wxWidgets • React.js

Experience

May 2019 - Current
Data Scientist | Magarvey Lab
- Adapted Google's **BERT** model for biosynthetic gene cluster analysis, **increasing** biosynthetic family prediction accuracy by **12%** (vs **ULMFiT**) and **20%** (vs **pfam2vec**)
- Parsed **millions** of **JSON** files in **python** to clean, manipulate, and analyze **genomic** and **metabolomic** lab data
- Increased **f1-score** from **0.62 to 0.79** for substrate prediction on adenylation domain sequences
- Developed a pipeline to call **gene cluster occurrences** within genomes using natural language models, competing with state-of-the-art technology (**antiSMASH**, **PRISM**)
- Created interactive graphs to analyze large vector spaces

September 2019 – Current
Project Manager and Executive | McMaster AI Society
- Hosted biweekly tutorials on basic to advanced machine learning techniques and topics using **python**
- Organized project teams for **Kaggle**, **AI for Good**, and more

December 2018 – April 2019
Undergraduate Research Assistant | McMaster University
- Implemented image processing algorithms (**OpenCV)** in **C++** to improve **object detection** for video annotation software
- Designed a cross platform video player GUI in **wxWidgets**

Awards

Scholarships
McCall MacBain International Fellow
Presidents Entrance Scholarship

Hackathons
1st Place – L3 Hack Wescam 2018
1st Place – Deloitte Pitch Competition, Hack the North 2019
3st Place – Materials Challenge, DeltaHacks 2020
3rd Place – IBM Tech Challenge, Big Red Hacks 2019

DECA
2nd Place Regional (MCS) • Top 15 Exam Provincial (MCS)

Education

2018 - 2022
Software Engineering (3.6 GPA)
McMaster University

2018 - 2019
Deep Learning
Udacity Nanodegree

Projects

Leaders Prize (ongoing)
Python | Docker | PyTorch
Placed 1st among 150+ teams for the first round in **Canada's largest AI competition**, that offers a **$1,000,000 prize** to the individual (or team) that best automates the detection of **fake news** using AI.
https://leadersprize.truenorthwaterloo.com/

L3 Hackwescam (winner)
C++ | OpenCV
Participated in a 3-day long competitive hackathon involving **drone** control, **object detection**, and **object recognition**. Placed **1st** with a reward of **$4000.**
https://github.com/jaymody/hackwescam

NumPy-ML
Python | NumPy
Cut computation time in half for activation function gradient calculations for a popular **open source** machine learning repository with over **7300 stars on github**.
https://github.com/ddbourgin/numpy-ml

Brawler64
Java | SWT | OOP
Built a PvE beat 'em up video game featuring a controlled game loop, graphics, sound, and a decision-tree computer opponent.
https://github.com/jaymody/Brawler64

Word Embedding Visualizer
Python | Dash | HTML/CSS
Developed a dash **web application** that visualizes and compares **word embeddings** across various language models (**BERT, ELMo, word2vec**) and dimensionality reduction techniques (**PCA, UMAP, t-SNE**).
https://github.com/jaymody/word-embedding-visualizer