Jay Mody

Software Engineer

Software Engineering Student at McMaster University with a passion for math, computer science, and research.

Contact

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Experience

2019 - Current

Data Scientist

Applying machine learning models for experimental genomic and metabolomic research.

- Adapted Google's BERT model for biosynthetic gene cluster analysis, increasing biosynthetic family prediction accuracy by 12% (vs ULMFiT) and 20% (vs pfam2vec)
- Increased f1-score of substrate prediction on adenylation domain sequences from 0.62 to 0.79
- 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 result space

Magarvey Lab

2019 - Current

Project Manager and Educational Coordinator

- Host weekly tutorials on basic to advanced machine learning techniques and topics
- Organize project teams for Kaggle, AI for Good, and more

McMaster AI Society

2018 - 2019

Undergraduate Research Assistant

- Implemented image processing algorithms (OpenCV) in C++ to improve object detection for video annotation software
- Created a cross platform video player GUI in wxWidgets

McMaster University – Dept. Electrical and Computer Engineering

Projects

L3 Hackwescam (winner)

C++ | OpenCV

Participated in a 3-day long competitive hackathon involving drone control, object detection, and object recognition. Placed first with a reward of $4000.

NumPy-ML

Python | NumPy

Cut computation time in half for activation function gradient calculations for a popular open source machine learning repository with over 6000 stars on github.

Brawler64

Java | SWT | OOP

PvE beat 'em up game featuring a controlled game loop, graphics, sound, and a decision-tree computer opponent.

Word Embedding Visualizer

Python | Dash | HTML/CSS

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).

Skills

Languages

Python • C/C++ • Java • HTML • CSS

Tools

NumPy • Tensorflow • OpenCV • Pandas • SKLearn
Unix • Git • Bash • Batchfile • GCloud
Dash • LaTeX • SWT • wxWidgets

Education

2018 - Present

Software Engineering (Level II)

McMaster University

2018 - 2019

Deep Learning

Udacity Nanodegree