BORNA SADEGHI

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EDUCATION

McMaster University

Sep 2020 - Apr 2025

B.Eng, Computer Engineering (Co-op)

Cumulative GPA: 3.6 / 4.0

RELATED SKILLS

Skills and Technologies

3D printing, Airflow, CAD, GCP, Git, Hardware prototyping, Keras, Linux, Neural networks, Node.js, Testing

Languages

Python, SQL, HTML, CSS, JS, Java, C, C++

EXPERIENCE

Data Scientist Intern *at Geotab*

Jan 2022 - Dec 2022

- Pinpointed **15+** major data quality issues in real-world vehicle data from a global telematics fleet of **over 3 million vehicles**
- Prevented **several billion** occurrences of erroneous data logs, with some issue types appearing **94% less often** since I started
- Captured issues with detailed SQL logic, and created visualizations to help identify issue occurrence patterns
- Enabled the embedded team to use these analytics to locate bugs in GO device firmware and improve data quality
- Designed an automated alerting chatroom for when data quality metrics worsen significantly across firmware versions

Project Team Member *at McMaster AI Society*

Sep 2020 - Apr 2021

- Performed academic research on state-of-the-art machine learning models to reference in our own work
- Replicated the AlexNet CNN in Keras, for a convolutional discriminator as part of a style transfer GAN that makes regular images look like Claude Monet paintings
- Tweaked the model's hyperparameters (layer configuration, training time) to improve the quality of the results
- Worked with a small team using agile/scrum methodologies, where each team member developed a different part of the GAN

Backend Developer Intern *at CheaprEats*

Aug 2020 - Nov 2020

- Designed and optimized Node.js server architecture and GraphQL API for a Receipt Designer app targeting **20+ food vendors**
- Actively communicated with designers and frontend developers to determine what functionality is needed in the backend
- Created Javascript methods that pull from a MongoDB database to return various analytics to vendors (e.g. ten bestselling items)
- Wrote and optimized seeder scripts to generate mock testing data for a MongoDB database

PROJECTS AND INITIATIVES

Co-Authored Machine Learning Research Paper

Aug 2021 - Dec 2022

- Designed a feedforward machine learning model to predict the coefficient of friction in ring compression tests using the change in ring geometry, material properties, and reaction force from FEA simulations
- Predicted the coefficient of friction **within 3.6%** of the actual value on average
- Meticulously tuned model hyperparameters (layer configuration, dropout, optimizer, training time) to maximize performance
- Paper was released to Vol. 180 of Tribology International, a major tribology (friction studies) journal with an **18% acceptance rate**
- Planning a future paper for our improvements, such as feature selection and production of a mathematical formula
  https://www.sciencedirect.com/science/article/pii/S0301679X22007691

Homemade Chess Clock

- Programmed an ATMEGA328P microcontroller with Arduino to control a chess clock with two LED displays and four input buttons
- Recycled a mobile power bank to provide power to the chess clock circuit and allow for charging
- Designed buttons and enclosure from scratch with CAD using Autodesk Inventor
  https://bornasadeghi.github.io/chess_clock.html

CERTIFICATIONS

Linkedin Learning

- Python Data Analysis *Aug 2021*
- PyTorch Essential Training: Deep Learning *Aug 2021*
- Node.js: Real-Time Web with Socket.io *Jan 2021*
- Learning Node.js *Jun 2020*
- Learning React.js *Jun 2020*
- Learning Vim *Feb 2021*