MUHAMMAD BILAL AMIN

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SUMMARY

- **Languages:** Python · C++ · Ruby · Octave · Bash · C
- **Tools:** NumPy · TensorFlow · SciPy · Git · matplotlib · GitLab · Jira · Docker · Jenkins

EXPERIENCE

ExactEarth - Software Developer Intern Apr - Aug 2019 Cambridge, ON

- Developed a bit packing and padding algorithm whose run-time was **25x** faster than comparable NumPy library functions
- Optimized in **Python** a data parsing algorithm to allow for **3x** faster reading of satellite packet data
- Created a back-end **pipeline component** in **Python** that generates worldwide positional anomaly reports for ships and allows for efficient querying
- Collaborated with Senior Developers and PhD's to determine the best software architecture for new satellites to make future releases easier

eSentire - Software Developer Intern Sep - Dec 2018 Cambridge, ON

- Wrote a back-end micro-service in **Ruby** that allows for remote updates for client's software across major Operating Systems (Linux, Windows, OSX)
- Reduced false positive threat alerts by **33%** after implementing new metrics in **Python**
- Increased efficiency of logging process by **5%** by refactoring back-end microservices

TradeRev - Software Development Analyst Jan - Apr 2018 Toronto, ON

- Utilized Selenium and TestNG to automate regression and integration testing in Java
- Responsible for all aspects of the analyst workflow, including the development of test plans, and test cases

PROJECTS

Easy-Notes (NSBE Hacks - Best Student Education Hack & 2nd Place Winner) *https://devpost.com/software/easy-notes*

- Leveraged **Google Cloud** to transcribe university lectures into short notes by coupling corresponding video and speech components to form a comprehensive study package for students
- Divided video lecture into distinct components by acquiring timestamps on PowerPoint slide changes using Google Cloud's **Vision Intelligence** API
- Transcribed given lectures to correspond with slides using Google Cloud's **Speech to Text** API to allow for on demand searching of keywords

Handwritten Digits Classifier (Neural Network) *https://github.com/Mbamin/HandWritten-Digits-Classifier-Neural-Network*

- Created a **3 layer Neural Network** from scratch, which was used to classify handwritten digits (without the aid of external libraries such as Keras and TensorFlow) in **Python**, using **Numpy** and **SciPy**
- **96 % Accuracy** - Trained and Tested on the MNIST dataset
- Conducted unit testing via visualization of training data using **matplotlib**

Cit-Ease (University of Waterloo - uXperience Hackathon 3rd Place winner) Nov 2017

- Developed a design for a new app that would decongest traffic in metropolitan areas, with the potential to generate over **$1,000,000** of revenue for cities during peak tourist season

EDUCATION

University of Waterloo 2017 - Present Waterloo, ON

B.A.Sc, Mechatronics Engineering, Honors Co-op 2022

Major GPA: **3.9/4.0**

Relevant Courses: Data Structures and Algorithms, Real Time Operating Systems, Convolutional Neural Networks for Visual Recognition (Stanford - CS231n)