Jack Douglas

Software Engineering

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Skills

Languages: C, C++, Python, Java, MATLAB, SQL, PHP, JavaScript, HTML, CSS
Technologies/Frameworks: TensorFlow, Keras, NumPy, Unix, Linux, Git

Experience

Sunnybrook Focused Ultrasound Lab — Software Development Intern   Toronto, ON

Image Processing Project   July 2019 – August 2019

- Adapted image segmentation pipeline using MATLAB and Python to detect liver lesions in ultrasound images
- Automated the lesion detection process resulting in a 10x increase in speed
- Adapted and ran simulations in MATLAB using the Khokhlov–Zabolotskaya–Kuznetsov (KZK) equation to model non-linear pressure waveforms

Signal Processing Project   July 2018 – August 2018

- Developed scripts using MATLAB and SQL to characterize diagnostic ultrasound signals and determine the success of high-intensity focused ultrasound treating bone tumours
- Applied fractal dimension algorithms to achieve 95% accuracy in locating the bone index and tumour dimensions

Software Projects

Digit Recognition   December 2019 – present

- Developed a computer vision model for classifying digits from a neural network using TensorFlow and Keras
- Achieved 97.6% accuracy on the testing dataset used in Kaggle's Digit Recognizer Competition

Autonomous Maze-Solving Robot   September 2019 – December 2019

- Created a robot using C++ and an Arduino which optimizes its path efficiency with a path simplifying algorithm
- Designed and 3D printed a chassis that organized the circuitry to allow for easy reassembly

Extracurriculars

Waterloo Data Science Club   September 2019 – present

- Attended workshops and lectures on computer vision, natural language processing, and deep learning

MoneySmarts Financial Literacy Platform — Senior Web Developer   May 2017 – May 2019

- Developed a financial literacy website, with over 4,000 users, aimed towards teens and young adults
- Created a budget calculator and implemented a chatbot using a Facebook API

Awards

UCC Head Boy and Grant Medal Runner-Up   2019

- Graduated with the second highest ranking based on IB total

J.N.C Sharp Prize in Mathematics   2019

- Awarded to the student who best combines excellence in Mathematics and leadership in helping others

American Invitational Mathematics Examination Qualifier   2019

- Offered to students in the top 5% on the American Mathematics Competition 12 (AMC12)

Canadian Champion (Perfect Score), Pascal Math Contest   2016

- Top score out of 25,000 students on the Pascal Math Contest

Education

University of Waterloo, Waterloo, ON   2019 – 2024
Candidate for Bachelor of Software Engineering (B.SE.)

- GPA: 85%

Upper Canada College, Toronto, ON   2015 – 2019
Ontario Secondary School Diploma, International Baccalaureate Diploma

- Average: 99% | IB Total: 44 (top 0.78%)