SHUO HOU

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Summary of Qualification

- Hands-on experience in computer vision tools (**OpenCV**, MATLAB Computer Vision Toolbox), machine learning and deep learning frameworks (**Scikit-learn**, **Keras**, **Tensorflow**)
- Solid computer science background, proficient with programming in **Python**, **C**, **Java**, **SQL** and **MATLAB**
- Familiar with front-end technologies such as **HTML**, **JavaScript**, **Node.JS**, **Bootstrap**, **Angular**
- Proficient with version control tools such as **Git**, SVN
- Good understanding of project management and **software development lifecycle** (SDLC)
- Excellent communicator, able to explain complicated technical ideas in simple language

Education

Master of Engineering, Department of Computing and Software 09/2018 – 09/2019
McMaster University, ON, Canada

Honours Bachelor of Science, Department of Computer Science 09/2014 – 06/2018
University of Toronto, ON, Canada

Project Experience

Canada Federal Election Twitter Sentiment Analysis 11/2019

- Trained a sentiment model using 200,000 tweets from Twitter, pre-processed the tweets using regex and nltk
- Extracted election related live tweets and Twitter using Twitter API, applied the sentiment model on entities (Names, Party, Region) mentioned in the tweets and analyzed the sentiment by entity, visualized the results of the sentiment on an interactive map built with JavaScript and Node.js

Breast Cancer Tumor Image Classification with Deep Learning 08/2019

- Collected clinical Ultrasound (US) images and on Photoacoustic tomography (PAT) images, performed data augmentation on the image data to increase the training set by 5X
- Applied different filters, such as Gaussian filter, Non-Local mean noise reduction to reduce the noise in the data
- Trained a shallow CNN, VGG, and ResNet using GPU cluster on Compute Canada and tested the performance of the architecture via k-fold cross-validation

Face Detection and Gender Classification 05/2019

- Developed a machine learning model to detect faces in images and videos and classify the gender
- Detected new face patches every 10 frames using Eigen Feature detector and tracked the feature points overtime
- Trained the gender classifier with a CNN model on the Face94 dataset, applied the classified on the detected face patches

Evaluating Robustness of Lane Detection Models 04/2019

- Collected image frames from public data sources and self-recorded driving data, calibrated the image with OpenCV to correct data quality issue such as camera's inherent distortion
- Applied the traditional computer vision-based technique and deep learning-based technique; evaluated the performance of the techniques under different scenarios and summarized the pros and cons for each technique

Urban Sound Clip Classification with RNN and CNN 01/2019

- Analyzed 8000+ urban sound clips in .wav format from 10 classes (AC, Car Horn, Drilling, etc.)
- Built a CNN model using Keras to classify the sound clips, achieving an accuracy of 95%
- Developed a front-end interface using flask, HTML and JavaScript for users to submit a .wav file and classify the sound

Flight Booking Android App 11/2018

- Extracted, transformed and loaded flight info in a PostgreSQL Database and connects to the client user interface via a JDBC connector
- Designed an Android App using Android Studio for users to search for flights, pick most optimal flight path