Shihan Ai

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EDUCATION

University of Toronto **Sept 2012 – June 2017**

Honours Bachelor of Science with Distinction, Computer Science, Specialization in Artificial Intelligence
Major GPA: 3.58/4.00 (CGPA: 3.40/4.00)

TECHNICAL SKILLS

Computer Vision & Machine Learning: Python, C++, MATLAB, NumPy, OpenCV, TensorFlow

Web Development: HTML, CSS, JavaScript, NodeJS, React, SQL, MongoDB

PROFESSIONAL EXPERIENCE

IBM, Software Engineer Intern **May 2015 – Aug 2016**

- Designed the backend of a central analytics platform for IBM dashDB using NodeJS and IBM DB2
- Created infographics using D3.js with live data from dashDB and provided managers with real-time analytics
- Analyzed the collected data and identified the pain points that customers had with IBM dashDB
- Developed a tweet scheduler with NodeJS and DB2 to automate the promotion of IBM DB2 on Twitter
- Automated the collection of video analytics from YouTube using Python and generated infographics using D3.js to capture the effectiveness of IBM DB2 promotional videos on YouTube

University of Toronto, Research Assistant **May 2014 – Aug 2014**

- Developed a script with Python and NLTK that can attach semantic meaning to unstructured web data
- Built a Twitter bot with Python that can respond to movie related tweets with showtimes and recommendations
- Performed lexical analysis on tweets to understand the structure of natural language on social media

PROJECTS

Photo Enhancer **July 2017 - Present**

- Created a command line tool in C++ and OpenCV that can add various visual effects to digital photos
- Tested various smoothing functions and evaluated their effectiveness in achieving a photogenic blurring effect
- Implemented color mapping effects to user marked objects in an image by utilizing foreground extraction techniques and by processing the RGB image in the HSV color space
- Currently creating an iOS mobile application using Swift that employs optimized foreground extraction techniques to enhance high resolution photos taken by the cameras on modern day mobile phones

Optimized Interactive Foreground Extraction **June 2017 – July 2017**

- Engineered an algorithm using Python, NumPy, and OpenCV that can classify pixels in an image as either the foreground or the background of the image
- Independently researched and implemented methods to decrease processing time when processing HD photos
- Performed benchmark tests against traditional foreground extraction methods such as GrabCut and improved the processing time of 12-Megapixel (3024 x 4032) images from an average of 74 seconds to 3.6 seconds

Exemplar-Based Image Inpainting **May 2017 – June 2017**

- Independently researched and implemented an algorithm in Python, NumPy, and OpenCV that can crop out user defined areas on an image and replace the cropped-out areas with visually plausible textures
- Analyzed and identified the optimal hyper parameters and produced results with little or no optical artifacts
- Identified and applied the algorithm to real world applications such as acne removal in digital photos

Seam Carving **Nov 2016 – Dec 2016**

- Utilized dynamic programming and Python to efficiently perform content-aware image resizing on an image by removing seams comprised of the least significant pixels
- Performed tests to measure the effectiveness of various definitions of pixel significance and concluded that using the image gradient produced the best results