Roger Girgis

roger.girgis@gmail.com | 514-691-5645 | LinkedIn | Github (roggirg)

EDUCATION

MCGILL UNIVERSITY | Master of Engineering

Electrical and Computer Engineering | September 2016 - August 2018 (Expected) | Montreal, Canada

- Thesis Supervisor: Professor Jeremy Cooperstock
- My research focuses on the application of machine learning in assistive technologies.
- Cumulative GPA: 3.89 / 4.0 (Thus far)
- Credited Courses: Machine Learning, Computer and Biological Vision, Human-Computer Interaction

CONCORDIA UNIVERSITY | Bachelor of Engineering

Mechanical Engineering | January 2011 - June 2014 | Montreal, Canada

- Degree Conferred with distinction
- My final year focused on Robotics, Mechatronics and Automation.
- Final GPA: 3.83 / 4.3

HONORS AND AWARDS

- 2011 - Recipient of the James McQueen Entrance Scholarship Award.
- 2013 - Dean's list based on performance of 2012-2013 academic year.
- 2014 - Dean's list based on performance of 2013-2014 academic year.
- 2016 - Recipient of the Graduate Excellence Fellowship Award.

PUBLICATIONS

- Hearing Between the Lines: Crossing Intersections with an Intelligent Mobile Companion for the Visually Impaired. Girgis, R., Diaz M., Fevens, T. and Cooperstock, J. R. Under Review, 2017.
- To Veer or Not to Veer: Learning from Experts How to Stay Within the Crosswalk. Diaz, M., Girgis, R., Fevens, T. and Cooperstock, J. R. In 5th International Workshop on Assistive Computer Vision and Robotics (ACVR), 2017.
- Did you feel that? Developing Novel Multimodal Alarms for High Consequence Clinical Environments. Alirezaee, P.; Girgis, R.; Kim, T.; Schlesinger, J.; and Cooperstock, J. R. In International Conference on Auditory Displays (ICAD), 2017.

RESEARCH EXPERIENCE

NOVEL SCENE CAPTIONING FOR THE VISUALLY IMPAIRED | Expected Publication

February 2017 - September 2017 | McGill University

- Working on the design of a scene captioning architecture that could be implemented on Mobile applications.
- Currently exploring approaches that leverage deep reinforcement learning to know when it is ideal to provide a caption.

ASSISTING VISUALLY IMPAIRED USERS WITH VEERING | Publications

February 2017 - September 2017 | McGill University

- Co-authors a Deep Imitation Learning approach to tackle the veering problem of visually impaired individuals at street intersections.
- Recollected and composed the street crossing demonstration dataset.
- Trained and evaluated different Convolutional Neural Networks architectures (Mobilenet, Squeezenet, Xception, ResNet50) to derive a policy that provides the optimal heading to safely cross an intersection.
- Designed and developed an Android application prototype to test different models performance for rendering real-time signals to the users.

- Conducted an experiment that tested the prototype with five visually impaired participants.
- Skills: Deep learning, imitation learning, Tensorflow, Keras, Tensorflow API for Android, Android, opencv, numpy, scikit-learn, Experiment design, User experience.

DESIGNING MULTIMODAL ALARM SYSTEMS FOR HIGH-RISK ENVIRONMENTS | Publication
December 2017 - February 2017 | McGill University

- In this work, we tested if the addition of a subthreshold haptic stimulus would allow for the reduction of audio levels in high-consequence environments (e.g., emergency rooms).
- Designed an experiment that puts participants through a series of double-random staircases to obtain their auditory threshold with and without a haptic stimulus.
- Skills: Haptic stimulus design, Matlab programming, Auditory stimulus design, Experiment Design, Staircase Method.

PROFESSIONAL EXPERIENCE

INTEMPCO CONTROLS
Order Coordinator
September 2016 – September 2017 | Pointe-Claire, Canada

- Ensure all orders have all required components.
- Contact suppliers to ensure they meet production schedule.
- Enter new products in the ERP system, ensuring all relevant documentation is attached.

Sales Engineer
June 2014 – February 2016 | Pointe-Claire, Canada

- Provided technical product information to incoming requests from current and new customers.
- Assisted customers with choosing the correct product for their application.
- Researched and communicated with prospective clients – Gave product presentations to engineering teams.

Intern Production Engineer
September 2013 – June 2014 | Pointe-Claire, Canada

- Optimized the drawing system to ensure fast turnaround from order receipt to commencement of the manufacturing process.
- Tracked open orders and aided in the assembly process to ensure orders met the shipping schedule.
- Designed a cable straightening machine used to improve the manufacturing process of temperature sensors.

DISTRICT 3 INNOVATION CENTER
Project Leader
June 2013 – August 2013 | Pointe-Claire, Canada

- Lead a multi-disciplinary team made up of Master's and PhD students to commission and automate a laser welding machine.
- Ran the final system successfully, through a production line, permitting the company to manufacture a complex piece of equipment.
- Received the Validated prototype prize from District 3 Innovation Center.

HIGHLIGHTED PROJECTS

SCENE CAPTIONING | Computer and Biological Vision Course
October 2016 - December 2016 | McGill University

- Implemented the work from the paper "Show and Tell: A Neural Image Caption Generator" as part of the course project.
- This involved the implementation of an encoder-decoder deep neural network. In this work, the encoder constituted a convolutional neural network, and the decoder, a Long-short term memory.
- Obtained human evaluation of the model's generated captions using three crowd-sourced raters per image.
- Prepared a presentation comparing how the model I trained performed against the results reported by the authors.

INTERSECT-ASSIST SMARTPHONE APPLICATION | Human-Computer Interaction Course
September 2016 - December 2016 | McGill University

- Worked closely with visually impaired individuals throughout the project to ensure that it meets their requirements.
- Went through the full cycle of user-centered design. This includes building user personas, proposing a project, testing a wizard of oz prototype, creating the application and final testing.

- The proposed application would help the user locate what corner they are at and provide more information regarding the intersection's configuration (e.g., one-way vs. two-way, T-shaped vs. cross-shaped).

IMAGE CLASSIFICATION | Machine Learning Course
March 2017 | McGill University

- Classified a 40-Class version of the Imagenet Dataset using deep learning.
- Implemented a transfer learning approach and benchmarked four types of pre-trained convolutional neural networks.
- Finished in the top-5 for best validation accuracy in a class of 40 teams.

TEXT CLASSIFICATION | Machine Learning Course
February 2017 | McGill University

- Classified a corpus of short conversations extracted from the Reddit website into one of ten possible topics.
- Pre-processed the data using Python's natural language toolkit and TF-IDF weighting.
- Implemented an Instance-based learning algorithm (i.e. K-Nearest Neighbor).

TECHNICAL SKILLS

- Programming Languages: Python, C++, Java
- Applications/Tools: Keras, Tensorflow, Git, MATLAB, OpenCV, Android Development, Natural Language Toolkit, Numpy, Scikit-learn, Pandas.
- IDE: Visual Studio, Android Studio, PyCharm, MATLAB IDE.
- Other: Dealing with Data structures, Applying Statistical Methods

LANGUAGES

Spoken & Written: English and French