Justin Szeto

justin.szeto (at) mail.mcgill.ca | https://www.linkedin.com/in/justin-szeto/

Education

Master of Science (Thesis) in Electrical and Computer Engineering **Sep 2020 – Present**
Supervisor: Dr. Tal Arbel CGPA: 3.94/4.00
Probabilistic Vision Group, Centre for Intelligent Machines (CIM), Mila – Quebec AI Institute
Department of Electrical and Computer Engineering
McGill University, Montreal, Quebec

Bachelor of Software Engineering, Minor in Computer Science **Sep 2015 – Dec 2019**
McGill University, Montreal, Quebec CGPA: 3.91/4.00

Skills

Languages: Fluent in English, intermediate in French
Programming Languages: Python, JavaScript, Java, C#, C++, Bash, SQL
Tools and Frameworks: Git, Docker, PyTorch, OpenCV, scikit-learn, Flask, React.js, ANTs, Microsoft Office
Operating Systems: Windows XP/7/10, Linux (Ubuntu)

Work Experience

Machine Learning Developer Intern (R&D) **Jan 2022 – Present**
Sama, Montreal, Quebec
- Designed and developed dataset content analytics system using object detectors
- Accelerate image annotation time by leveraging deep learning segmentation models

Research Assistant **Nov 2019 – Aug 2021**
Probabilistic Vision Group, McGill University, Montreal, Quebec
- Provided software support to graduate students and managed computational resources
- Reviewed and optimized graduate students' code to maximize usage of available computational resources
- Developed user-friendly deep learning pipeline for medical imaging to standardize research in the lab
- Collaborated with graduate students on research projects and publication writing
- Assisted with research grant applications and purchasing new computational hardware

Summer Undergraduate Researcher **May 2019 – Aug 2019**
Probabilistic Vision Group, McGill University, Montreal, Quebec
- Reviewed existing literature to understand current state-of-the-art methods
- Utilized state-of-the-art deep learning methods to predict patients' future condition from MRIs
- Collaborated with other researchers in the lab to develop new visualization tools for deep learning methods

Software Developer Intern **May 2017 – Aug 2017**
Matrox Electronics System Ltd., Dorval, Quebec
- Converted user interfaces from Windows Forms to Windows Presentation Foundation
- Designed new user interfaces in XAML and C# using Visual Studio
- Organized code using the Model-View-ViewModel architectural pattern
- Utilized Apache Subversion as version control software to integrate new code into existing one

Activities

MAIS Hacks 2021 **Oct 2021**
MultiBet – 2nd Best Overall Hack
- In a team of 3, built a Gradio web app to practice writing characters from multiple languages, with built-in character recognition and corrective feedback on writing style
- Devised scalable data collection scheme for training character recognition model by rendering fonts

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McHacks 8 Hackathon **Jan 2021**

McTavish St. Bets – Top 5 Hacks (2nd place)

- In a team of 4, designed a web app to estimate future stock prices using historical stock prices and sentiment analysis of tweets
- Integrated stock price prediction model into Flask backend server that served results to a React.js frontend

McGill Code.Jam (2020) Hackathon **Nov 2020**

MyWardrobe – Best Overall Hack, Samasource Online Retail and Shopping Smart App Award

- In a team of 4, built a React.js web app for virtual try-on of clothing using recent advances in deep learning
- Designed mock web storefront where users can select clothing and upload a photo for virtual try-on
- Deployed various deep learning models on Flask backend server to generate virtual try-on images of users

Publications

B. Nichyporuk. J. Cardinell, **J. Szeto**, R. Mehta, D.L. Arnold, S.Tsaftaris and T. Arbel, "Cohort Bias Adaptation in Federated Datasets for Lesion Segmentation", in Proceedings of the MICCAI 2021 Workshop: *3rd MICCAI Workshop on Domain Adaptation and Representation Transfer (DART)*, held in conjunction with the *24th International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI 2021)*, held virtually (Strasbourg, France), September 2021. **BEST PAPER AWARD**

X. Bouthillier, P. Delaunay, M. Bronzi, A. Trofimov, B. Nichyporuk, **J. Szeto**, N. Mohammadi Sepahvand, E. Raff, K. Madan, V. Voleti, S. Ebrahimi Kahou, V. Michalski, T. Arbel, C. Pal, G. Varoquaux, P. Vincent, “Accounting for Variance in Machine Learning Benchmarks”, in *Proceedings of Machine Learning and Systems 3*, (MLSys 2021).

B. Nichyporuk, **J. Szeto**, D.L. Arnold and T. Arbel, "Optimizing Operating Points for High Performance Lesion Detection and Segmentation Using Lesion Size Reweighting", the *4th Conference on Medical Imaging With Deep Learning* (MIDL 2021), held virtually (Lubeck, Germany), July 7-9, 2021. (short paper)

Scholarships & Awards

McGill Engineering Undergraduate Student Masters Award	**2020-2022**
Graduate Excellence Fellowship	**2020**
NSERC Undergraduate Student Research Award	**2019**
CAE Scholarship in Engineering	**2019**
John H Ambrose Scholarship	**2019**
Beverly and Arthur Mendel Family Scholarships	**2017**
Camillia Samson Scholarship in Engineering	**2017**
Faculty of Engineering Scholarship	**2017**
Dean’s Honour List	**2016, 2017, 2019, 2020**
Esterline CMC Electronics Inc. Scholarship	**2016**
J.W. McConnell Scholarship	**2015**

Academic Projects

BetaSense Software **Jan 2019 – Dec 2019**

- Designed and developed a cross-platform C++ GUI application to control and collect data from a digitizer
- Created a build pipeline to facilitate development, testing, and version control of the application with teammate

Vehicle Classifier and Localizer **Nov 2018 –Dec 2018**

- Collaborated in a team of 5 to design a program that can classify images of different vehicles and locate vehicles in larger images
- Utilized various computer vision and machine learning techniques to extract relevant features from images to correctly identify vehicles

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In-class Kaggle Competition **Nov 2018 –Dec 2018**

- Participated in a team of 3 to design the most accurate image classifier on small noisy images of doodles from Google's Quick Draw!
- Placed in the top 5 teams using a convolutional neural network classifier with 84% accuracy
- Developed an image pre-processing step to denoise the images and crop out most of the empty space

Machine Learning Model Ablation Study **Nov 2018 –Dec 2018**

- Analyzed a paper about a new machine learning model to understand the model's strengths and weaknesses
- In a team of 3, attempted to reproduce the paper's results and performed experiments to analyze the model's sensitivity to various hyperparameters

To-Do List Application **Jan 2018 – Apr 2018**

- Applied Agile methodologies to coordinate a team of 10 to develop a to-do list application using JavaFX
- Aided teammates in resolving any technical issues brought up during daily Scrum meetings
- Successfully completed all sprint goals for each 3-week sprint without any setbacks