Mengyu Yang

Machine Learning · Computer Vision · Human-Computer Interaction

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Education

University of Toronto *Toronto, Canada*

B.A.Sc. in Engineering Science (Major in Machine Intelligence) *Sep 2017 - Apr 2021*

Publications

Mask-Guided Discovery of Semantic Manifolds in Generative Models

- ***Mengyu Yang**, David Rokeby, Xavier Snelgrove.* NeurIPS 2020 Workshop on Machine Learning for Creativity and Design.

CHI 2021 Submission

- *Bryan Wang, **Mengyu Yang**, Tovi Grossman.*

Research

Vector Institute for Artificial Intelligence & Dalhousie University

Undergraduate Thesis, Advised by Professor Sageev Oore *Sep 2020 - Present*

- Built a jazz piano dataset using a custom processing pipeline to train a harmonizer transformer
- Designed and trained a neural net transformer that harmonizes an input melody, used within a larger system that converts human voice into music

BMO Lab in Creative Research in the Arts, Performance, Emerging Technologies and AI

Research Intern *May 2020 - Nov 2020*

- Experimented with different optimizers and designed custom loss functions for loss landscape exploration with the goal of generating animations of localized facial changes from StyleGAN2
- Designed an optimization-based method, guided by a physics-inspired loss function, to learn manifolds within the latent space of generative models corresponding to localized feature changes on the generated image

Dynamic Graphics Project, University of Toronto

Undergraduate Research Student, Advised by Professor Tovi Grossman *Sep 2019 - Sep 2020*

- Created an algorithm that segments music within guitar tutorial videos into temporally localized phrases, used within a music learning system that allows guitar learners to easily navigate through the lesson
- Conducted a technical evaluation on the segmentation algorithm by developing tests to measure precision, recall, F1, and boundary similarity against human-labelled ground truths, with results exceeding baseline performance

Dynamic Graphics Project, University of Toronto

Undergraduate Research Student, Advised by Professor Khai N. Truong *May 2019 - Sep 2019*

- Developed a webcam tool for face detection and pupil tracking to detect when the user has incorrect gaze response and head posture, implemented within a system for teaching piano sight reading
- Designed and implemented a dynamic-programming algorithm for identifying correctly played notes from noisy audio data, achieving **100%** accuracy on all testing examples

Experience

Industry

Salesforce

Intern *Sep 2020 - Present*

- Leveraged deep learning models, unsupervised learning techniques, and data science processes to discover trends in customer support correspondences to motivate internal process changes and improve chatbot technology

Teaching

Division of Engineering Science, University of Toronto

ESC101/102 Teaching Assistant *Sep 2019 - Apr 2020*

- Taught engineering design principles to classes of 20-30 students by leading individual group sessions
- Graded field note reports and core competency evaluations; provided feedback on design showcase presentations and suggested areas of improvement

Leadership

Dynamic Graphics Project, University of Toronto

Project Adviser for High School Student *Jul 2019 - Sep 2019*

- Advised a high school student under a professor, holding regular meetings and providing advice for developing a method to translate measurement data from digital calipers to be used for real-time 3D modelling

Division of Engineering Science, University of Toronto

Student Ambassador *Sep 2018 - Apr 2020*

- Represented the Engineering Science program in public outreach events, including the Ontario Universities Fair, Top Applicant Event, and EngSci Orientation, to answer questions and connect with students and families

Honors & Awards

Academic

2017 - 2020 **Dean's Honour List ×4** *University of Toronto*

Scholarships

2017 **University of Toronto Scholar** *University of Toronto*

2017 **William Ian Mackenzie Turner 2T5 Admission Scholarship** *University of Toronto*

2017 **Faculty of Applied Science and Engineering Admission Scholarship** *University of Toronto*

Projects

Recurrent Neural Network for Sentiment Classification *2019*

- Developed and trained a RNN architecture for sentiment analysis, classifying sentences as either objective or subjective by using Word2Vec embedding on a dataset of Rotten Tomatoes and IMDb posts

Autonomous Tire-Stacking Robot *2018*

- Designed, prototyped, and fabricated circuits that controlled the movement and sensing of an automated robot, integrated with a PIC microcontroller