STEPHEN BRADE

University of Toronto

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EDUCATION

MSc in Computer Science

Human-Computer Interaction and AI

Sept 2022 - Jan 2024 University of Toronto

- Supervised by Prof. Tovi Grossman and Prof. Sageev Oore
- GPA - 4.0/4.0

BASc in Engineering Science

Machine Intelligence Major

Sept 2017 – May 2022 University of Toronto

- CGPA - 3.22/4.0, Major GPA - 3.61/4.0

EXPERIENCE

Master's in Computer Science

University of Toronto

Sept 2022 – Jan 2024 Toronto, Canada

- Collaborating with Prof. Sageev Oore of the Vector Institute and Prof. Tovi Grossman of DGP
- Aiming to develop novel AI powered systems that support human creativity with a focus on music
- Teaching courses on introductory introductory python, data science, and statistics

NSERC USRA

University of Waterloo

May 2021 – August 2021 Toronto, Canada

- Tested the tractability of predicting the number of syllables in a clip of music containing a line of lyrics
- Designed an algorithm to clean and correct an RNNs prediction of beats using discrete fourier transforms and signal processing
- Explored representing raw waveforms of polyphonic music with VQ-VAEs

Machine Learning Engineer

AMD

May 2020 – April 2021 Markham, Ontario

- Completed full-stack development and deployment of an in-house application to help architects find regressive code in the AMD graphics driver code base
- Implemented end-to-end data flow testing for the AMD machine learning pipeline
- Proved the efficacy of automated source code analysis to superiors using machine learning

SKILLS

- Languages: Python, C, Matlab, Julia, SQL
- ML: Pytorch, TensorFlow, scikit-learn, Numpy, Pandas
- Development: React.js, Flask

COURSE WORK

- Machine Learning, Neural Networks and Deep Learning, Probabilistic Reasoning and Statistics, Natural Language Computing, Imitation Learning, Ethical Aspects of AI, Data Structures and Algorithms

PUBLICATIONS

- Stephen Brade, Bryan Wang, Mauricio Sousa, Sageev Oore, and Tovi Grossman
  Promptify: Text-to-Image Generation through Interactive Prompt Exploration with Large Language Models
- Archya Dasgupta, Stephen Brade ... & Gregory Czarnota
  Quantitative ultrasound radiomics using texture derivatives in prediction of treatment response to neo-adjuvant chemotherapy for locally advanced breast cancer
- Archya Dasgupta ... Stephen Brade ... & Gregory Czarnota
  Radiomics in Predicting Recurrence for Patients with Locally Advanced Breast Cancer using Quantitative Ultrasound

PROJECTS

Intuitive Sound Synthesis

- Currently developing an intuitive full stack application that gives musicians flexible semantic control of synthesizers
- Investigating the use of joint representations of text and audio (e.g. LAION-CLAP) to rapidly create intuitive controls for synthesizers
- Jointly investigating mapping these controls to interfaces that enable timbral changes with expressive timing

Promptify

- Designed and developed a novel support tool for novice users of Stable Diffusion
- Completed a 14 participant user study showing Promptify is more useful than a popular baseline
- Submitted to ACM UIST and available on arXiv

Generating Exposure

- Experimented with ways of generating exposure for human artists with text-to-image models
- Used CLIP embeddings to connect generated images to related huamn created artwork in training data of text-to-image models
- Ran a user study to measure relevance of retrieved human art
- Concluded that this solution was a viable way of connecting users with human made artwork similar to a given generated image