

# STEPHEN BRADE

## University of Toronto

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📍 Toronto, ON

🔗 stephenbrade.github.io

📄 github.com/stephenbrade

## EDUCATION

### MSc in Computer Science

#### Human-Computer Interaction and AI

📅 Sept 2022 - Jan 2024

📍 University of Toronto

- GPA - 4.0/4.0

### BASc in Engineering Science

#### Machine Intelligence Major

📅 Sept 2017 - May 2022

📍 University of Toronto

- CGPA - 3.34/4.0, Major GPA - 3.68/4.0

## 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
- **Music:** Max MSP, DawDreamer

## COURSE WORK

- **Undergraduate:** Machine Learning, Neural Networks and Deep Learning, Probabilistic Reasoning, Statistics
- **Graduate:** Imitation Learning, Ethical Aspects of AI, Quantum Information Theory, Software Engineering for ML

## PUBLICATIONS

- Stephen Brade, Bryan Wang, Mauricio Sousa, Gregory Lee Newsome, Sageev Oore, and Tovi Grossman  
*SynthScribe: Deep Multimodal Tools for Synthesizer Sound Retrieval and Exploration*
- 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*

## SELECTED PROJECTS

### SynthScribe

- Developed a tool that gives flexible control of synths with multimodal deep learning
- Collaborated with musicians at every stage to gain perspective on user needs
- Implemented features for synth sound search, modification, and creation
- User study showed SynthScribe leads to desirable sounds and saves musicians' time
- Accepted to NeurIPS workshop for creativity and design

### Promptify

- Designed and developed a novel support tool for novice users of Stable Diffusion
- Used LLMs to make prompt suggestions that enhance generated images
- 14 participant user study showed Promptify is more useful than a popular baseline
- Published at ACM UIST

## HOBBIES

- Language learning: Italian and Spanish
- Music: Avid guitar player