Eleanor Row

AI & Music Researcher | Contemporary Composer | BA Music | Classical Pianist & Singer
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About

I am a PhD student working with Dr. George Fazekas within the Centre for Digital Music (C4DM) at Queen Mary University of London. I research the applications of machine learning in music and audio with a focus on music generation.

Currently, my research centres around the implementation of machine learning models for tasks in music composition, such as music inpainting, overpainting and style transfer.

As a composer and classically-trained musician, my research is entwined with my love of music. I am developing AI tools to extend and enhance creativity in music composition and live performance, in collaboration with a group of professional composers from diverse backgrounds around the world.

Qualifications, Skills & Experience

Musical Background

- Classically-trained pianist, violinist, singer and contemporary composer, with performances given at the University of Nottingham (UoN) and the University of Hong Kong (HKU).
- Mentored by composer Elizabeth Kelly, my composition 'Reunion' was performed at UoN Sustainability Month.
- First violinist in the professionally-led UoN Philharmonia.
- Winner of Southampton Choral Society's '2016 Young Musician of the Year' Award.

Machine Learning (ML) and Deep Learning (DL) Architecture Design

- Currently developing and training Transformer models using PyTorch for music overpainting, using and synthetically expanding datasets such as JAZZVAR and LakhMIDI to generate music variations for music composition and uses in live performance.
- Previously undertaken diverse ML masters projects such as ornamentation prediction in music; MIDI and audio inpainting; and music generation.
- Trained Autoencoders (AEs), Convolutional Variational Autoencoders (VAEs) and Transformer models with PyTorch, and previously explored techniques such as contrastive loss for inpainting tasks.

Data generation, Processing, and Feature Extraction

- Created the JAZZVAR dataset using automatically transcribed jazz piano performances and MIDI lead sheets.
- Employed various libraries (including librosa, torchaudio, pyaudio, pretty_midi, miditoolkit) for comprehensive data processing, cleaning, analysis and feature extraction for MIDI, MusicXML and audio data (including methods for pattern identification and melodic/harmonic rhythmic analysis).
- Proficient in a suite of software, including DAWs (Ableton, Logic) and Music Notation tools (Sibelius, Musescore, Dorico).

Human-Computer Interaction

- Currently conducting a Design Ethnography study with a group of professional composers, exploring and documenting different composers approaches to creating music with various technologies.
- Aim to bring a voice to composers who currently feel displaced within the Music industry due to the advancements of AI technology.

Scientific Publications

Row, Eleanor, Jingjing Tang, and George Fazekas. "*JAZZVAR: A Dataset of Variations found within Solo Piano Performances of Jazz Standards for Music Overpainting*." arXiv preprint arXiv:2307.09670 (2023). CMMR2023

Education

PhD in Artificial Intelligence and Music, C4DM at Queen Mary University of London (2020-present)

4th Year UKRI ESPRC grant recipient. PhD thesis Title: Developing a Generative Music System as an AI composition tool for creating musical variation.

Specifically researching deep learning techniques for music generation and tools for creativity support.

Currently conducting a study with composers in Design Ethnography. MSc masters courses (as part of the PhD) in: Machine Learning, Deep Learning for Audio and Music, Music and Audio Programming, Computational Creativity, Music Informatics.

Music BA (Hons) 2:1 , The University of Nottingham (2016-2020)

Dissertation thesis: Neural Networks as a Creativity Support tool in Film Music Composition.

Extra credit Mandarin and Leadership modules taken under the Nottingham Advantage Award.

Courses included: Portfolio of Compositions, Mixed Reality Technologies, Film Music, Music of China Performance, Conducting, Composition, Analytical, Theoretical, and Historical courses.

Study Abroad Exchange Programme at The University of Hong Kong (2017-2018)

Participated in ARG AI reading group, St. John's College Community Service Team; and Table Tennis Team.

Work experience

Teaching Fellow, Department of Electrical Engineering and Computer Science (EECS) Queen Mary University of London (2023 – Present)

Supervision of undergraduate and masters computer science students in DL and ML audio and music topics. Teaching User Experience Design in Semester B of current academic year.

Teaching Associate, EECS, Queen Mary University of London (2021 – Present)

Solely responsible for leading Labs and Workshops throughout modules including Professional Research Practice, and previously User Experience Design; responsible for training and overseeing demonstrators on the course; responsible for creating the mark scheme, overseeing the marking and examination process.

Media and Marketing Specialist Intern, Shed Studio, China (2019, 1 month)

Main responsibilities included: Managing Digital Assets, Working and Editing Video and Projects.
One of the main projects included testing and marketing Oculus Quest Accessories.

IELTS English Teacher Intern, EIC Education China (2019, 1 month)

Conducted progress reviews and led IELTs lessons with students.

English Teacher Jolly Kingdom English Learning Centre, Hong Kong (2018-2019, part time)

English Language teacher for students aged 3-14 years. Encouraged teamwork amongst international colleagues, from discussing lesson plans to offering assistance in lessons, and gained great leadership skills and awareness from teaching children across a range of ages and backgrounds.

Secondary School work experience placement, IBM Winchester UK (2013, 1 month)

Carried out statistical and data input tasks, Introduced to Java, C++ programming.