

HONS Prospectus: Choir and AI

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Project Description

AI has become a hot topic within the last year. With the rise of ChatGPT, Google's Bart, and Microsoft's BingAI, we've seen AI utilized in many places, especially surrounding education. While some researchers have tried to create AI that can generate choral music, no one has talked about how this AI generated music impacts people from the singer's perspective. While some research has been done surrounding how AI is impacted in the choral setting, most research simply bases it off of whether it sounds similar to the original composer. However, in reality many AI models choose to write voice parts that are outside the comfortable range of the singer and don't keep the singer in mind at all when writing new music.

This project aims to work with singers to determine the success of AI generated choral music as it stands today. The goal will be to research any models that already exist for generating choral music and try to regenerate voice parts using AI. Additionally, this project will see how well the parts are written for a singer to be able to perform successfully. This project will specifically focus on the work of Bach's chorales because there is lots of data to train on and they are short pieces that can be quick to learn. This project is interdisciplinary as it combines computer science (with the AI component) with the choral arts.

Methodology

To start, research will be conducted on the different possible AI models that already exist that can re-score Bach chorales. Currently one model I have found that can do this is DeepBach, but it is important that I find other models as well. This will mean looking through research papers to understand these various models and try running the models on my own development machine. I will also try to see if I can develop my own model, but this may not be feasible as I don't have an extensive background to create a really intense model that would perform anywhere near as well as people with PhD's in computer science. This research phase will conclude with me picking 2-3 Bach chorales and generating their AI counterparts.

Next is the performance aspect with the choirs. This will entail creating a choir (either through an audition process or on an invite basis) that will learn all the chorales and their AI counterparts. This choir would rehearse once per week for 60-90 minutes with myself as the director helping teach the music. Throughout the process, I will ask members of the choir how they feel when performing real Bach versus performing the AI versions of Bach.

Final Product & Public Facing Component

The final product (which is also the public facing component) will be a talk and performance describing the music that is generated throughout the creation of this project. The final date/time/location is not yet set in stone, but the hope is for this performance to be the week before Spring Break in the 3rd Floor Chapel in College Hall.

Additionally, a final research paper/script will be written and completed by the end of the fall semester. More will be added to the paper after the experience of working with the choir, but all other components of the paper will be complete by this time.

Assessment Plan

The following 4 things will need to be completed in order to ensure that this was a successful project:

1. Determine models and songs by end of Summer 2023
2. Continue research/data analysis through the end of October 2023
3. Write a thesis paper by December 2023
4. Rehearse a choir and perform the AI music in March 2024

Timeline

1. Summer 2023
 1. Research other AI models beyond DeepBach
 2. Pick 2-3 chorales and generate music for each model
 3. Clean and get working functional research datasets
2. September 2023
 1. Continue reading research articles
 2. Finish getting AI models working on my computer
 3. Start working on data analysis
3. October 2023
 1. Finish reading research articles
 2. Continue/finish working on data analytics
4. November/December 2023
 1. Write the thesis paper
 2. Start recruiting for the choir
5. February 2024
 1. Rehearse choir
6. March 2024
 1. Give the final talk/performance with the choir

Materials Needed

- Choir - ideally 8-12 singers (2-3 voices per part)

- preferably GU students but might need to pull from Symphony Chorale
- Rehearsal pianist - already secured (Henry Stone)
- \$500 to be used for the following:
 - one dinner for the choir and other helping members
 - paying the pianist

Advisor Approval / Signature

**I approve of this project and am happy to serve as the faculty advisor.
//signed May 3, 2023//**

Meg Stohlmann

**Meg Stohlmann, DMA
Director of Choral and Vocal Studies**

Figure 1: Advisor Signature