HONS Senior Project Creator Statement: Choir and AI

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My senior project is centered around AI generated choral music. In this project, I will research various AI models that have the ability to generate choral music that is in the style of how JS Bach would write his music when he was alive. Once I pick a few Bach chorales to generate AI versions of, I will get a choir of roughly 8-12 singers to sing through the non-AI and the AI versions of these Bach chorales. I will ask the members of the choir what their experience was like singing AI versus normal Bach chorales. The final product will result in a performance of all the music as well as a talk explaining how the AI musc differs from the original compositions. For more information on the details of my project, see my HONS Prospectus document.

Why I Am Doing This Project

This project is really exciting to me because I get the opportunity to intersect my career passions with the hobbies that have made my college experience absolutely incredible. Data science is the career path that I am currently on, and this project has data science written all over it. I will have to go through many datasets on chord progressions in Bach chorales to understand how they work and then understand how the AI is trained. Additionally, I've been singing with various choirs for the last 7 years. This project will give me the opportunity to direct my own choir for the first time. Not many people have the opportunity to pursue work that intersects multiple varied interests of theirs, and this project will allow me to do just that.

Additionally, this project has a lot of relevance in today's day and age. AI has started to become a more easily usable tool thanks to ChatGPT and other companies following suit (Google Bart and Microsoft BingAI). As students are starting to use ChatGPT in their schoolwork, it would be interesting to see if this AI that is being used for choir is strong enough that educators could use this AI as a learning tool in the classroom. Could it generate sight reading exercises for students? Or simple songs that can help students understand how to listen across the choir or tune? Or is the AI still unreliable for singers that it shouldn't be used to that capacity yet?

Value and Commitments

There are a few values that I have that motivate the reasons for doing this project:

1. AI in the Classroom: AI has already made its way into schools as students use it for their homework assignments. However, ChatGPT and other similar AI can be used as a learning tool rather than a cheating mechanism.

Can this AI that can generate choral music be used as a teaching tool for students to learn how to be stronger choristers? Or is the AI unreliable in its voice leading so this will not be possible?

2. Singer phenomenology: People have varied reactions when interacting with works generated by AI. How do individual singers feel when they interact with AI generated choral music? Is it written in a way that it is singable, or does it have singers flying by the seat of their pants as it has them jumping all over their tessitura?
3. Showing the beauty of the human voice: Often we talk about the incredible feats of humans through how we break the barriers of what we believe is possible. However, I belive that the unique beauty of the human voice comes from the limitations of the human voice. Because of the limitations of the human voice, certain AI generations are not feasible to be sung, even though a computer makes it sound plausible. This project will aim to highlight these moments.

Educational Experience

The educational experiences that I have had mostly center around my experience with choral singing. Ever since I was in high school and exposed to my first renaissance piece (Sicut Cervus), I fell in love with early choral music. Throughout high school, I would spend my waking hours listening to small chamber vocal ensembles like The King's Singers, Voces8, Chanticleer, Cantus, and more. Since joining the choirs here at Gonzaga, I have had the opportunity to be featured in more large choral works, such as Bach's Magnificat, Handel's Messiah, Mozart's Requiem, and one of the premiering groups of Jocelyn Hagen's The Notebooks of Leonardo Da Vinci. These works have been incredibly rewarding to work on and these performances have been a highlight of my collegiate experience.

Additionally, I have had an interesting path when it comes to my love of programming in college. Programming is an activity that I find incredibly frustrating if I don't have any passion for what I am building. Sadly, most schoolwork in computer science is boring and not fulfilling to me. However, anytime I have had an opportunity to build a piece of software surrounding a hobby, I have had an incredible time building cool things. For example, my capstone semester-long project for my data science minor had me designing a dashboard that analyzed my data surrounding my gameplay in Splatoon 3 which is a Nintendo shooter game that I have sunk many hours into. I have also written software surrounding digital identities on the blockchain, which is a topic I have become passionate about since my internship the summer going into my junior year. This project gives me the opportunity to interact with and develop code surrounding choral music, which is something that I am very passionate about.

Helpful Future Goals

The main helpful future goal is that I can begin to build relationships with people who are excited about work intersecting computer science and choral arts. Throughout this process, I will likely be in contact with the researchers who have already developed existing AI models and written papers surrounding this topic. By having conversations with these people, I can try to understand what it takes to work in a space that intersects choral arts and computer science. This project would have the ability to open doors to potential future work opportunities.

Communities This Impacts

The main community that this project will impact is choral directors. As AI is becoming more present in the choral classroom, educators will be interested to see if AI will be something that they can use as a learning tool in their own classrooms. This is why presenting at the ACDA Northwest conference would be an incredible public facing component, as my target audience at this conference would be current and future music educators. Additionally, there is not much research being done on the choral arts at the undergraduate level, and therefore music educators would be interested in providing a space for someone like myself to share research surrounding choral arts.