Milestone 1 Report

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Main goal of milestone

Meet team members, divide tasks, evaluate the feasibility of the project, adjust details, and create the dataset that will be used in the project.

Current state of project

After discussing the feasibility of the project, our team realized that the project is challenging but doable. Initial research was done in order to find similar projects that implemented a solution to our problem. Some of the resources are Lunaverus and Deep Watershed Detection. We downloaded the first software to see how it works (as it is extremely similar to our project) and contacted the researchers responsible for the second resource to exchange information (still waiting for a reply).

Then, we had an overview of what needed to be done for the project as a whole. Beyond the Machine Learning bit of the project, we realized that creating a website from scratch would be very challenging. Our team has committed to giving it a try during this week and to reassessing the situation during Milestone 2.

The initial proposal said data acquisition would be done through Youtube videos in order to train our model. However, upon further research, our team realized that there are other resources that are already available in the format we need. An example is The Mutopia Project, which has over 780 music sheets and audio available for download. We implemented a simple scrapping mechanism using Selenium and downloaded the files that are currently in our M1 folder.

An important insight we had as a team was that we don't need to use the whole recording obtained from a 3-minute long video as our training set. We can divide the recording into smaller pieces, such as 1-minute or even 30-second audio. Now, the challenge lies in converting the audio files into something our model can process. Inspired by Lunaverus, we decided that one of the most promising ways to solve this would be by converting the .mid files into .jpg files that would contain the wavelengths detected in the audio recording.

During the following week, two of our members will be further researching the best model possible for this solution while another one acquires more data and the last one begins building the website. For the next milestone, we hope to have a bigger dataset and to decide on the model we will be developing for the rest of the project.

Technical Challenges

Converting .ps files into PDFs in bulk
Choosing the best input for our model

Team tasks

Juliana Choi

- Research of similar projects online (DONE)
- Write of milestone 1 report (DONE)
- Research of how to turn audio into images and whether that is the best model for our project (IN PROGRESS)

Andre Correia

- Solve the problem of how to convert .ps files into PDF or PNG files without too much performance loss (DONE)
- Start working on the non-ML component of the project by learning more about HTML, JS and CSS. (IN PROGRESS)

Harman Sihota

- Collect initial samples for dataset (DONE)
- Continue looking for other sources of data and acquiring more data (IN PROGRESS).

Charles Wang

- Research into data acquisition via Youtube (DONE)
- Research on identifying sounds as notes in sheet music for model (IN PROGRESS)

Links for future reference

https://tuggeluk.github.io/deepscores/ - musical scores dataset (used in deep learning)
https://theonlinemetronome.com/websites-free-sheet-music.html#free-scores - websites with free sheet music to train our model
https://stackoverflow.com/questions/682446/splitting-out-the-output-of-ps-using-python - reference on how to work with .ps files from our dataset.