Computer Science Capstone Topic Approval Form

The purpose of this document is to help you clearly explain your capstone topic, project scope, and timeline. Identify each of these areas so that you will have a complete and realistic overview of your project. Your course instructor cannot sign off on your project topic without this information.

Note: You must fill out and submit this form. Space beneath each number will expand as needed.

Any cost associated with developing the application will be the responsibility of the student.

INFORM INSTRUCTOR:

Potential use of proprietary company information: No

ANALYSIS:

1. **Project topic AND description:**
   H3 Music Corp, a Music Production company, has many untitled and unmarked audio samples of drums used to produce music digitally. This project will create a product to classify audio files by the type of drum sampled in the audio file.

2. **Project purpose/goals:**
   To create an AI tool to classify the drum type of an inputted audio file to aid in organization of H3 Music Corp audio resources. For example, if a untitled audio sample is inputted into the program, a prediction such as “Kick Drum”, or “Snare Drum” is outputted.

3. **Descriptive method:**
   Visualizations including spectrograms and histograms showing how audio features such as pitch and volume are distributed differently depending on the drum type and a confusion matrix to show the accuracy of the model.

4. **Predictive/Prescriptive method:**
   A machine learning model developed to predict the type of drum of an inputted audio sample. Outputs will be the drum name associated with the max value from a predictive model. The model will be a Supervised Deep Learning Convolutional Neural Network (CNN).

DESIGN and DEVELOPMENT:

1. **Computer science application type (select one):**
   Stand-Alone

2. **Programming/development language(s) you will use:**
   Python, Jupyter Notebooks, Adobe Auditions may be used to clean up audio files

3. **Operating System(s)/Platform(s) you will use:**
   All systems with python available, will be built on Windows 10 64Bit

4. **Database Management System you will use:**
   N/A

5. **Estimated number of hours for the following:**
   i. **Planning and Design:** 5 Hours
   ii. **Development:** 10 Hours

iii. **Documentation:** 10 Hours
iv. **Total:** 25 Hours

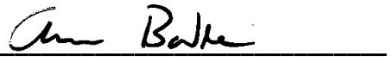
6. **Projected completion date:**
   6/19/2023

IMPLEMENTATION and EVALUATION:

1. Describe how you will approach the execution of your project:
   1. Get Data from H3 Music Corp to create dataset. ~2000-3000 audio samples of multiple drum types
   2. Clean data, and remove outliers. Ex: white noise or vinyl noise on a kick drum sample.
   3. Create a model. From my quick research I'm assuming a CNN
   4. Train model on dataset.
   5. Evaluate Performance, Accuracy and Precision.
   6. If not accurate, clean data better, or add more data.
   7. Document and create visualizations.

✓ **This project does not involve human subjects research and is exempt from WGU IRB review.**

STUDENT SIGNATURE



By signing and submitting this form, you acknowledge any cost associated with development and execution of the application will be your (the student) responsibility.

COURSE INSTRUCTOR'S NAME: 

COURSE INSTRUCTOR APPROVAL DATE: 06/05/2023