AAI-511 – Team Project Status Update Form

Team Number: Gangadhar Singh Shiva, Ananya Chandraker, Mohd Sharik

Team Leader/Representative: Gangadhar Singh Shiva,

Full Names of Team Members:

1. Gangadhar Singh Shiva
2. Ananya Chandraker
3. Mohd Sharik

Title of Your Project: ***Scalable, Agentic MCP Server Solution for Music Composer Classification Using Deep Learning, NLP, Transformers, Claude UI, Claude MCP Client on Sheet Music and MIDI Data***

Short Description of Your Project and Objectives:

Project Description

This project presents a scalable and intelligent solution for classifying classical musical compositions by composer using deep learning. The proposed system integrates a Multi-agent Communication Protocol (MCP) server to orchestrate specialized agents that process different formats of musical data. It leverages Convolutional Neural Networks (CNNs) for analyzing sheet music images via OpenCV, Long Short-Term Memory (LSTM) networks for capturing temporal dynamics in MIDI sequences, and Transformer models for deep contextual understanding of tokenized musical sequences. A core orchestration layer, powered by Claude AI, guides the workflow by analyzing metadata and dynamically selecting the appropriate model pipeline. The dataset consists of labeled compositions from classical composers such as Bach, Beethoven, Mozart, Chopin, and Schubert in both sheet music and MIDI formats. This system is designed not only to enhance composer recognition accuracy but also to serve as an intelligent music analysis tool

Objective

To develop a scalable, intelligent system capable of accurately classifying classical music compositions by composer using sheet music and MIDI files, through the integration of CNN, LSTM, Transformer models, and an MCP server orchestrated by Claude AI.

Description of Dataset:

The project will use a dataset consisting of musical scores from various composers.
The dataset Download dataset will contain MIDI files and sheet music of compositions from well-known classical composers like Bach, Beethoven, Chopin, Mozart, Schubert etc.

Are you using and practicing GitHub as a code hosting platform for version control and collaboration? If yes, provide the link here: **https://github.com/gshiva1975/AAI-511**

How many times have your members met in the last two weeks? 2 Times

List the specific contributions that each team member is providing for the Final Team Project in the table below.

- **NOTE:** ALL students on the team should contribute equally to the Final Team Project.

Gangadhar Singh Shiva	Chandraker, Ananya	Sharik, Mohd
Create Github Repo Data Collection & Cleaning	Data Collection & Cleaning	Data Collection & Cleaning
Exploratory Data Analysis	Exploratory Data Analysis	Exploratory Data Analysis
Feature Engineering	Feature Engineering	Feature Engineering
MLP Server Implementation (Routing, NLP Query Processing, Performance Measurement)	LSTM Implementation – Composer Identification and Performance Measurement)	CNN Implementation – Composer Identification and Performance Measurement)
Model Optimization	Model Optimization	Model Optimization
Integration with Claude UI/ Claude MCP Client, LSTM Implementation, CNN Implementation	Integration with Claude MCP Server LSTM Implementation	Integration with Claude MCP Server CNN Implementation
Model Training & Testing, Documentation	Model Training & Testing, Documentation	Model Training & Testing, Documentation

Comments/ Roadblocks: Integration with Claude UI and Claude Client would be challenging. Understanding different tools and modules is also challenging

Some of tools we will use are

Tool	Purpose
OpenCV	Image preprocessing (sheet music)
PyTorch / TensorFlow	Model training (CNN, LSTM, Transformer)
music21 / pretty_midi	MIDI feature extraction
Claude AI / LangChain	LLM-based orchestration and intelligent routing
MCP Server	Multi-agent communication, built using REST API