**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](https://sandiego.instructure.com/courses/19385/files/3232854?wrap=1)[Download dataset](https://sandiego.instructure.com/courses/19385/files/3232854/download?download_frd=1) 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 |