Live Training Dashboard for Audio Classification Models

This project provides a live web-based dashboard to visualize the training and validation metrics of a Keras/TensorFlow model for audio classification in real-time.

The dashboard is interactive and updates after each epoch using Plotly and Flask. It works entirely offline and does not require Jupyter notebooks.

Features

- Interactive Plotly graphs: hover, zoom, and pan.
- Local web interface (` http://127.0.0.1:5000/ `) that updates while training.
- Works with your actual dataset and model — no simulation required.
- Fully script-based; no notebook required.

Requirements

- Python 3.11
- TensorFlow (Keras)
- Plotly
- Flask
- Librosa
- scikit-learn
- tqdm
- NumPy

Note: Python 3.14 is not supported by TensorFlow yet. Please do use Python 3.11.

Installation

1. Install Python 3.11

   On macOS using Homebrew:

   Bash
   brew install python@3.11

2. Create Virtual Environment

   ```
   python3.11 -m venv tf_dashboard_env
   source tf_dashboard_env/bin/activate
   ```

3. Install dependencies

   ```
   python -m pip install --upgrade pip
   python -m pip install tensorflow plotly flask librosa scikit-learn tqdm
   numpy
   ```

4. Organising folders and subfolders

   Folders “SoundWaves” and “Spectogram” provided in the github contains raw audio files and segmented numpy arrays, please make sure that they are downloaded/ saved in the same folder as the python file, “training_dashboard.py” and the script are updated to your file path.

   ```
   base_folder = '/path/to/your/SoundWaves'
   output_folder = '/path/to/save/Spectrograms'
   ```

5. Run the dashboard script

   ```
   python live_training_dashboard.py
   ```

6. Open browser and direct to,

   http://127.0.0.1:5000/