DAY 9

AI-Powered Music Generation with MusicGen

Today's project explored the world of **AI-generated music**. For the first time in this training, I stepped into the creative domain where instead of generating text or speech — I used an AI model to generate a **fully composed piece of music**.

I used **Meta's MusicGen** model (specifically, the musicgen-small version) to create a calming flute composition — complete with soft rain and rhythmic beats. This felt like teaching a machine to **compose a song based on imagination**.

AI Music Generation using MusicGen

Objective

To generate a short, calming piece of instrumental music using a natural language prompt.

Prompt used:

"A calming flute melody with soft background rain and added beats."

How It Works

Here's a step-by-step breakdown of how the script works:

- **Model and Processor Loading**

- Loaded MusicgenForConditionalGeneration and MusicgenProcessor from the facebook/musicgen-small checkpoint.

❖ **Prompt Input**

- Entered a custom natural language description of the desired soundscape (flute, rain, beats).

❖ **Processing the Prompt**

- The processor tokenized the input and prepared tensors for the model to understand.

❖ **Music Generation**

- The model generated audio tokens (up to 560 new tokens), based on the prompt's mood and structure.

❖ **Saving the Music**

- The output was converted into waveform audio using soundfile (.wav format) and saved locally.

❖ **Output File**

- A new file named generated_music.wav was created — containing the final music.

Tools and Libraries Used

Library/Tool	Purpose

Torch (PyTorch)	Runs the AI model
transformers	Provides the MusicGen model & processor
soundfile (sf)	Saves generated audio to a .wav file
scipy,numpy(optional)	Audio manipulation (if needed)

Output Experience

The final music clip had a **peaceful flute base**, layered with subtle rain and slow, rhythmic beats - exactly as described in the input prompt. It felt relaxing and meditative.

The best part? I didn't need any traditional instruments, digital audio workstations, or music theory knowledge - just a sentence and a model.

What I Learned

- How to work with **generative audio models** like MusicGen
- Importance of **prompt phrasing** to influence the musical style and mood
- How audio is represented and handled in AI outputs
- How to convert and store generated sounds using Python libraries

Real-World Applications

- AI-generated background music for apps, games, or meditation

- Relaxation or sleep music generators
- Soundtrack ideas for content creators
- Music ideation tool for composers and producers
- Educational demos on AI + creativity

Final Takeaways

This was one of the most **creative and satisfying** tasks so far. The idea that I could type a sentence and receive a full piece of instrumental music shows how far AI has come — not just in logic or language, but in **artistic expression**.

By combining AI with audio generation, I opened the door to endless possibilities in **creative technology**. I'm excited to experiment with more genres, instruments, and moods in upcoming projects.