

Project README

Here are the instructions to set up and run your AI Music Studio project.

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AI Music Studio v5

An LLM-Chained Orchestrated Hub for AI Music Generation, powered by a procedural engine and designed for direction by Gemini.

🎵 Features

- * **Chained-Core Architecture**: A modular system where different AI agents handle specific musical tasks (Theme, Harmony, Rhythm, Melody, Synthesis).
- * **Producer & Genre Emulation**: Generates music in the style of various genres and iconic producers using a deep procedural knowledge base.
- * **Real-time Audio Synthesis**: Utilizes Tone.js for in-browser audio generation and playback.
- * **Dynamic Controls**: Adjust settings like Genre, Producer Style, Tempo, and Key.
- * **Audio Export**: Save your 120-second masterpiece as a high-quality ` `.wav` file.
- * **Live Visualizer**: See the waveform of your creation in real-time.

🔧 Setup and Installation

This project is a single-file React application built with Vite and TypeScript.

1. Prerequisites

- * [Node.js](<https://nodejs.org/>) (version 18 or newer)
- * `npm` or `yarn` package manager

2. Create a New React Project

Open your terminal and run the following commands to create a new project using Vite, which is fast and efficient for modern web development.

```
```bash
Create a new Vite project with the React + TypeScript template
npm create vite@latest ai-music-studio -- --template react-ts

Navigate into your new project directory
cd ai-music-studio
````
```

3. Install Dependencies

The application requires several libraries for audio processing, file handling, and UI.

```
```bash
npm install tone jszip file-saver
````
```

- * `tone`: The core Web Audio framework for creating interactive music in the browser.
- * `jszip`: A library for creating `.zip` files (though the stem export feature is deferred, this might be useful for future enhancements).
- * `file-saver`: A utility for saving files on the client-side, essential for the "Save WAV" button.

4. Replace the Source Code

1. Navigate to the `src/` directory inside your new `ai-music-studio` project.
2. Delete the existing `App.css` and `App.tsx` files.
3. Create a new file named `App.tsx`.
4. Copy the entire code block from the **AI Music Studio v5 - Complete Application** section above and paste it into your new `src/App.tsx` file.
5. Open `src/index.css` and replace its contents with the following to enable a modern dark theme and layout:

```
```css
@tailwind base;
@tailwind components;
@tailwind utilities;

body {
 margin: 0;
 font-family: -apple-system, BlinkMacSystemFont, 'Segoe UI', 'Roboto', 'Oxygen',
 'Ubuntu', 'Cantarell', 'Fira Sans', 'Droid Sans', 'Helvetica Neue',
 sans-serif;
 -webkit-font-smoothing: antialiased;
 -moz-osx-font-smoothing: grayscale;
}
```

```

(Note: For TailwindCSS to work, you would need to install and configure it. For simplicity, the inline styles and basic CSS within the App.tsx will provide styling without this step, but for full fidelity, a Tailwind setup is recommended).

5. Start the Development Server

You are now ready to run the application.

```
```bash
npm run dev
```

```

This command will start the Vite development server. Open your web browser and navigate to the local URL provided in the terminal (usually `http://localhost:5173`).

🚀 How to Use

1. **Configure Settings**: On the left panel, choose a `Genre`, `Producer Style`, `Key`, and `Tempo`. The seed is pre-filled but can be changed for different random variations.
2. **Generate Music**: Click the **"Generate"** button. The orchestrator will run through the five cores: Theme, Harmony, Rhythm, Melody, and Synthesis. You can watch the progress in the "Orchestrator" panel and see detailed logs in the "Logs" section.

3. **Playback & Visualize**: Once generation is complete, the **"Play"** button will become active. Click it to listen to your 120-second audio track. The audio visualizer will display the waveform in real-time.
4. **Save Your Creation**: If you like what you hear, click the **"Save WAV"** button. Your browser will prompt you to download a `'.wav'` file of the full mix. button. Your browser will prompt you to download a `'.wav'` file of the full mix.