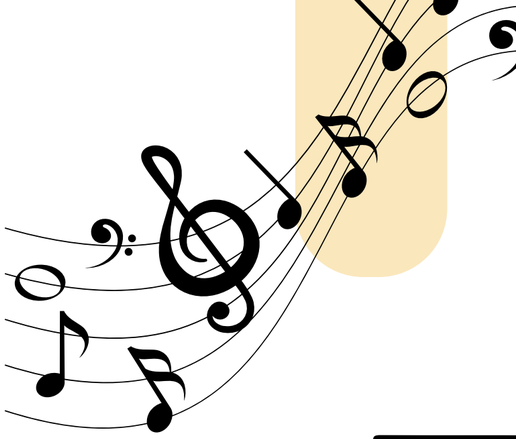
EXPLORATIVE GENERATIVE MUSIC PLATFORM



Theme ID: 2 – Content Creation(Entertainment & Gaming)

TEAM NAME : FORK,
RV COLLEGE OF ENGINEERING

https://youtu.be/tcxwWCpJvyY?si=FMvFf-tPj5n9tF-6

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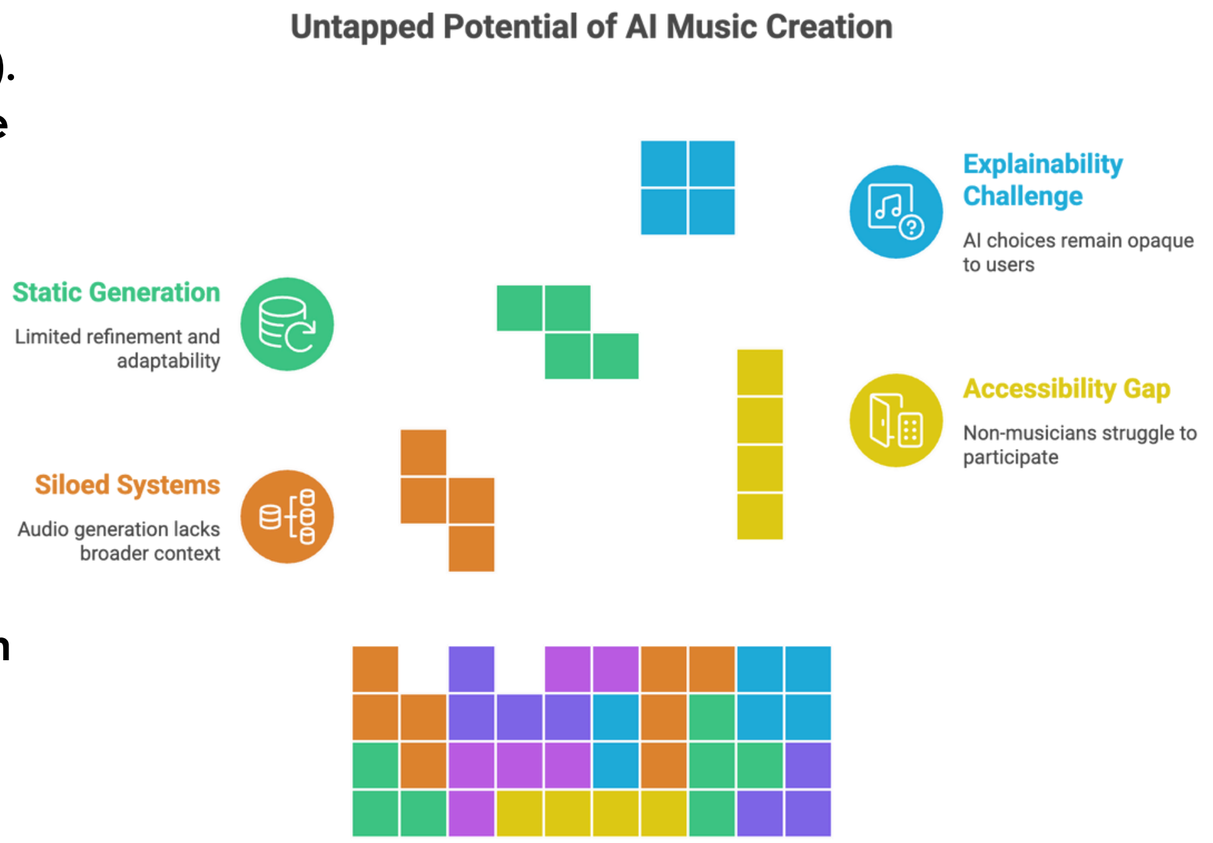
PROBLEM STATEMENT

- Music creation is often limited by the need for technical skills (instrument training, notation knowledge, composition ability).
- Many people can imagine melodies or emotions, but struggle to translate them into structured music.
- Existing tools are fragmented.
- Audio generation tools focus only on sound.
- Notation software focuses only on sheet music.
- Emotion-based or text-driven models lack integration with traditional music formats.
- There is currently no unified cross-platform service that bridges audio, sheet music, and emotion-driven creation, making music generation an exclusive domain rather than an open, democratized creative space. This gap in accessibility limits innovation and restricts collaborative and interactive experiences in the entertainment and content creation ecosystem.



OUR SOLUTION

Exploring Generative Music Platform

Text-to-Music
Describe your vision in words and transform into a full composition

Hum-to-Music
Simply hum a melody, and our system transforms it into a full composition

Mood Options
Select from uplifting, melancholic, energetic, calm, and mysterious

Tempo Control
Adjust the speed from slow to fast, 0–180 BPM

Explorative Generative Music Platform

Image-to-Music
Upload a picture and get music that matches the mood and colors

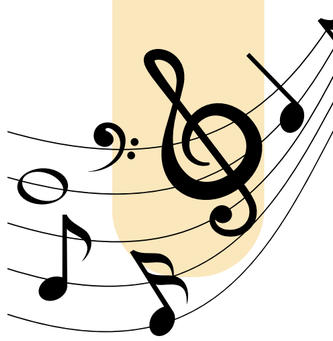
Genre Options
Choose from cinematic, lofi, electronic, orchestral, and ambient

Song Duration
Customize the length of the music up to 3 minutes

Output Formats
Downloadable WAV file and preview

https://youtu.be/tcxwWCpJvyY?si=FMvFf-tPj5n9tF-6

FEATURES

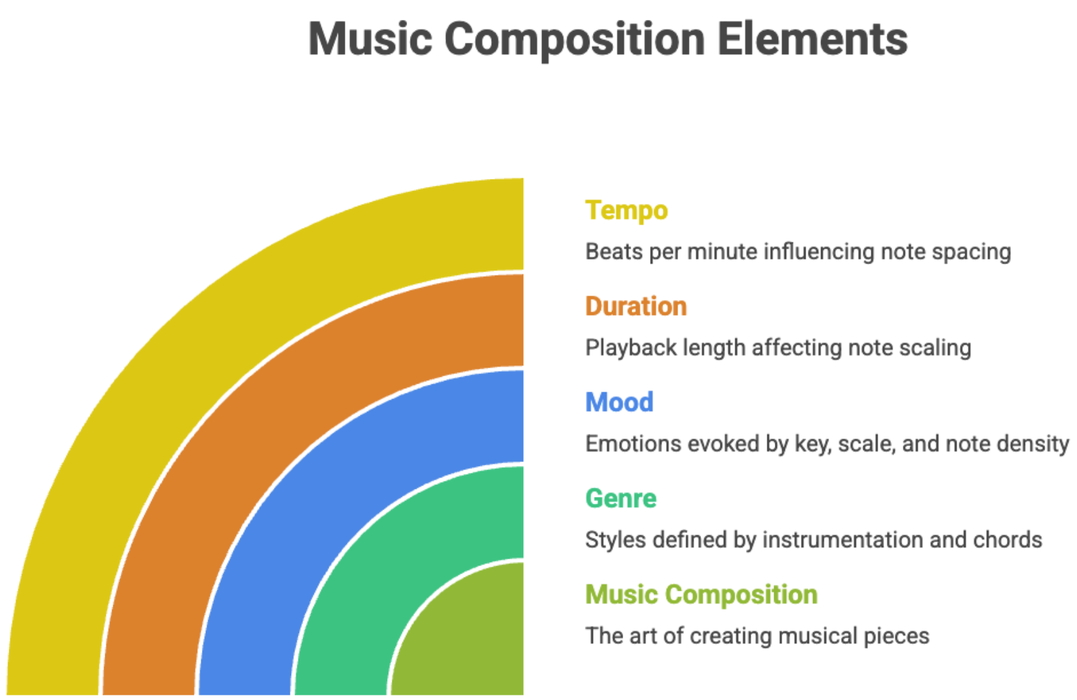


Genre → Instrumentation + Chord Style

- 🎬 Cinematic → Strings, big sweeping chords
- ☕ Lofi → Soft piano, jazzy chord progressions
- ⚡ Electronic → Synth layers, punchy staccato patterns
- 🎻 Orchestral → Layered triads, rich string sections
- 🌌 Ambient → Long sustained notes, airy textures

Mood → Key + Scale + Note Density

- 🌞 Uplifting → Major key, bright & faster notes
- 🌙 Melancholic → Minor key, slower & emotive
- 🔥 Energetic → Strong rhythm, staccato bursts
- 🌿 Calm → Sustained tones, gentle pacing
- 🕵️ Mysterious → Chromatic shifts, unexpected jump.



Duration (0–180s)

- Controls total playback length, rescaling notes accordingly.

Tempo (0–180 BPM)

- Sets beats per minute, spacing notes closer or farther apart.

WHY IT'S AMAZING?

Explorative

Allows users to experiment with different inputs to create unique music combinations.

Generative

Creates brand-new compositions each time, ensuring uniqueness.

Inclusive

Lowers the barrier for music creation, suitable for both musicians and non-musicians.

Multi-modal

Supports text, images, and audio inputs, enhancing interactivity.

Customizable

Offers full creative control over music parameters like genre and tempo.

TECH STACK

Frontend

- HTML, CSS, JavaScript → UI, sliders, forms
- Audio player → WAV/MP3 playback
- Upload support → image & humming audio

Backend

- FastAPI → API endpoints, static file serving
- CORS → frontend-backend integration
- Static files → WAV/MP3 storage

AI Models (Hugging Face)

- sander-wood/text-to-music → generate melody from text
- Salesforce/blip-image-captioning-base → image → caption → music
- Tokenizer + Seq2Seq LM → text encoding & decoding

Music Processing

- music21 → notation, triad harmonization, ABC → MIDI
- FluidSynth → SoundFont:GeneralUser GS v1.472.sf2
- pydub → WAV → MP3
- librosa → pitch extraction from humming audio.

USE CASES

Use Cases

- Music prototyping → indie artists, YouTubers
- Film/Game scoring → generate mood-based drafts
- Education → learn music theory interactively
- Accessibility → anyone can hum & get full track
- Personalized apps → meditation (ambient), fitness (energetic)

Impact

- Enables non-musicians to create music
- Multi-modal (text, image, humming) generation
- Full control: genre, mood, tempo, duration
- Bridges emotion + sound (uplifting vs melancholic)
- Democratizes music creation → accessible & creative

OBJECTIVES AND INNOVATION HIGHLIGHTS

User-Centric Benefits & Engagement Factors

- **No Music Theory Required** - Users can create melodies, harmonies, and rhythms without needing prior knowledge of sheet music or instruments. The system lowers the barrier to entry, making music creation accessible to everyone.
- **Guaranteed Originality** - Since the platform generates unique compositions, users don't need to worry about copyright strikes or plagiarism issues. Every piece they co-create with AI is new and owned by them.
- **All-in-One Creation Environment** - Users don't have to juggle multiple tools (DAWs, notation software, file converters). The platform integrates audio input, sheet music generation, editing, and playback into a single seamless workflow.
- **Cross-Modal Creativity**: Instead of being limited to just sound, users can explore music inspired by visuals (images, art, videos) or emotions (mood tags), making the experience playful and imaginative.