GSOC Proposal 2025: Generative AI for Personalized Music Recommendations

Basic Details

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Motivation

Why GSoC?
GSoC offers a unique opportunity to contribute to open source, hone my coding and collaboration skills, and work on real-world projects with experienced mentors.

Why Sugar Labs?
I'm drawn to Sugar Labs by its mission to empower education through innovative, open-source software and its vibrant, supportive community.

Why This Project?
I'm passionate about blending music and AI. This proposal merges my expertise in NLP and full-stack development to build a generative AI agent that delivers personalized music recommendations, creating meaningful and innovative user experiences.

Expectations:
I expect proactive guidance from mentors and active community support. Post-GSoC, I plan to continue enhancing the project and contribute to Sugar Labs' long-term vision.

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3. Project Details

- **Project Title:**
  Generative AI Agent for Personalized Music Recommendations
- **Project Description:**
  - The concept: An AI-powered conversational agent that determines a user's mood and music tastes through natural language dialogue.
  - Key features: Integration with Spotify API for user metadata and playlist management, real-time conversational modifications (e.g., tweaking mood, energy, genre), and optional personal data usage.

    - Technologies: NLP for mood detection, small LLM models (or API-based generative AI), a web-based chatbot UI, backend API handling, and Spotify API integration.
    - Impact: How this project will enhance personalized music experiences and add value to GFOSS (Open Technologies Alliance).
- **Core Features & Deliverables:**
    - A full-stack AI agent (locally hosted or via API) that processes natural language inputs.
    - Integration with Spotify for user authentication and playlist creation.
    - Real-time modifications of playlists based on conversational input.
    - Advanced mood detection using NLP or audio analysis.

Timeline and Milestones

Break your project into weekly chunks, including realistic buffers. For example:

- **Pre-GSoC / Community Bonding:**
  Familiarize yourself with Sugar Labs' codebase, join community channels, and refine your development environment.
- **Weeks 1–2:**
  Set up the development environment, integrate with Spotify API, and build the basic chatbot UI.
- **Weeks 3–4:**
  Develop core NLP functionality to analyse user inputs and map them to mood/genre preferences.
- **Weeks 5–6:**
  Implement the playlist generation feature and test real-time modifications.
- **Midterm Evaluation (End of Week 6/7):**
  Ensure the core functions (chat interface, Spotify integration, mood analysis) are working in a prototype.
- **Weeks 7–10:**
  Refine UI/UX, add additional features (like opt-out for personal data usage), and perform extensive testing.
- **Weeks 11–12:**
  Final debugging, documentation, and preparation for final evaluation.
- **Post-GSoC:**
  Outline your plans to maintain and enhance the project further, potentially contributing to Sugar Labs' ecosystem.

Note: Clearly mention any planned off-grid periods if applicable.