Mindspace Companion – Project Documentation

Project Title: Mindspace Companion

Type: Streamlit Web Application
Domain: Mental Health and Emotion Analysis
Developer: Manasvi Singh
Organization: Dymra Tech
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1. Objective

Mindspace Companion is a personal mental health companion designed to track, analyze, and support user emotions using artificial intelligence. It leverages NLP-based sentiment detection, simple audio processing, and interactive visualizations to empower users to understand their emotional state better and encourage self-care. The project bridges the gap between AI and wellness in an intuitive, user-friendly interface.

2. Features Overview

- **Text Emotion Analysis:** Detects emotions like happy, sad, angry, anxious, neutral, and gratitude using VADER sentiment analysis and keyword detection.
- **Voice Emotion Analysis:** Analyzes voice input for loudness and tempo to predict basic moods (happy, sad, neutral).
- **Mood Journal:** Allows users to save daily moods and notes. Also supports PDF uploads for auto-journaling.
- **Weekly AI Summary:** Summarizes weekly moods and frequent journal content using TF-IDF sentence scoring.
- **Mood Calendar:** Interactive sidebar calendar visualizing moods using emojis.
- **Analytics Dashboard:** Provides visual charts and word clouds to understand mood patterns over time.
- **Spotify Playlists:** Recommends mood-matching playlists using public Spotify links.

- **Self-Care Suggestions:** Gives users 5+ actionable suggestions based on their current mood.
- **ICS Calendar Export:** Enables users to download .ics files of mood logs or daily reminders.

3. Technologies Used

- **Programming Language:** Python 3.13
- **Framework:** Streamlit (for frontend and UI)
- **NLP Libraries:** VADER SentimentIntensityAnalyzer, TF-IDF via scikit-learn
- **Audio Processing:** Librosa, SoundDevice (optional)
- **Visualization:** Altair, Matplotlib, WordCloud
- **PDF Parsing:** PyPDF2
- **Calendar Export:** Manual .ics generator using datetime
- **Data Storage:** Local JSON file (mood_log.json)

4. File Structure

- app.py: The main Streamlit application.
- mood_log.json: Local file used to persist journal entries.
- requirements.txt: List of required Python packages.
- External assets: Spotify playlists, public GIFs for mood visuals.

5. How It Works

- **Input:** Users can enter freeform text, record their voice, or upload PDF files.
- **Detection:**
    - Text: VADER compound score + emotion-specific keywords determine mood.
    - Voice: Librosa estimates tempo and energy, classifies into simple mood categories.
    - PDF: Extracted text analyzed using the same emotion model as text input.

- **Output:**
    - Detected emotion
    - Motivational quote
    - Mood-related GIF
    - Spotify playlist link and preview
    - Optional journal entry saved

6. User Interface

- **Sidebar (pink theme):**
    - Monthly emoji-based mood calendar
    - Auto-updated suggestions based on the last mood
- **Main Area:**
    - **Analyzer Tab:** Text & Voice-based detection
    - **Journal Tab:** Entry history with delete & export options
    - **Analytics Tab:** Mood frequency charts, timeline plots, and word cloud

7. Benefits & Impact

- Encourages self-awareness and emotional reflection
- Makes journaling more fun and accessible
- Helps visualize mood trends across time
- Promotes self-care through personalized tips and media
- Lightweight and privacy-safe with local data storage
- No external API usage keeps it free and offline-compatible
- Custom motivational quotes and suggestions improve engagement

8. Future Scope

- Integrate GPT-based summarization and AI insights
- Emotion tracking via facial recognition and biometric signals
- OAuth-enabled user login and cloud sync

- Push notifications for mood check-ins or suggestions
- Integration with Google Calendar for real reminders
- Visual mood map based on time of day and weather
- Mobile version and offline journaling support

9. Installation Instructions

pip install streamlit vaderSentiment PyPDF2 scikit-learn wordcloud altair matplotlib numpy pandas
pip install sounddevice soundfile librosa # (optional for voice)
streamlit run app.py

10. Credits

- Emojis & GIFs: GIPHY API (free public links)
- Sentiment Analysis: VADER Lexicon
- Developer: Manasvi Singh
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11. Code Logic Highlights

- detect_text_emotion(text): Uses keyword detection and VADER compound scores to classify text into one of six moods.
- analyze_voice(audio_bytes): Uses Librosa to extract tempo and energy from audio and classifies it into mood buckets.
- summarize_text(text): Extracts top N important sentences using TF-IDF sentence scoring.
- generate_ics_from_logs(df): Converts journal entries into downloadable .ics calendar events.
- mood_calendar(): Displays emoji-based monthly mood map in the sidebar.
- journal(): Loads, displays, and allows export/deletion of mood entries; supports CSV and ICS export.

- analytics(): Generates Altair charts for mood distribution, timeline, and Matplotlib word clouds.

12. Conclusion

Mindspace Companion is a minimal yet powerful emotional wellbeing assistant. It emphasizes self-awareness and offers a balance of fun and mental health insights through AI-powered tools. By bringing together data science, user experience, and emotional intelligence, it makes emotional journaling rewarding, insightful, and even enjoyable.

"The greatest wealth is emotional peace."