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AI Mood-Based Music and Task Recommender System

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ABSTRACT

This paper presents an AI Mood-Based Music and Task Recommender System that intelligently detects user emotions and provides personalized suggestions. The system leverages machine learning, computer vision, and natural language processing techniques to analyze facial expressions, voice tone, and textual inputs. Based on the detected emotional state, it recommends suitable music playlists and productive or relaxing tasks. The system aims to enhance user well-being, reduce stress, and improve productivity. Experimental results show high accuracy in emotion detection and user satisfaction in recommendations.

I. INTRODUCTION

In today's fast-paced digital world, stress and emotional imbalance have become common challenges. Music and structured activities are known to influence human emotions positively. With advancements in artificial intelligence, systems can now understand user emotions and respond accordingly.

The proposed system combines emotion recognition with intelligent recommendation engines to create a personalized assistant. It can suggest calming music during stress, energetic songs during low motivation, and relevant tasks to improve productivity. This integration bridges the gap between emotional intelligence and smart technology, making it highly relevant in modern applications.

II. LITERATURE REVIEW

Emotion recognition has been widely studied using facial expression analysis, speech processing, and sentiment analysis. Traditional music recommendation systems rely on collaborative filtering and user preferences, while task recommendation systems are often rule-based.

Recent advancements include deep learning models such as Convolutional Neural Networks (CNNs) for facial recognition and Recurrent Neural Networks (RNNs) for speech and text analysis. However, integrating all three modalities—face, voice, and text—into a unified recommendation system remains a developing area. This project contributes by combining these approaches into a single intelligent system.

III. METHODOLOGY

The system follows a multi-stage process:

1. Data Acquisition: Captures user input via webcam, microphone, or text interface.
2. Preprocessing: Cleans and normalizes input data for analysis.
3. Emotion Detection: Uses machine learning models to classify emotions such as happy, sad, angry, or neutral.
4. Recommendation Engine: Maps detected emotions to music playlists and task suggestions.
5. Output Delivery: Displays recommendations via a user-friendly interface.

Technologies used include Python, OpenCV for image processing, NLP libraries for text analysis, and machine learning frameworks such as TensorFlow or PyTorch.

IV. SYSTEM ARCHITECTURE

The system architecture consists of three main modules:

- Input Module: Captures real-time user data.
- Processing Module: Performs emotion detection using AI models.
- Recommendation Module: Generates personalized outputs.

The modules communicate through APIs and are integrated into a unified system. Cloud services can be used for scalability and data storage.

V. IMPLEMENTATION

The system is implemented using Python as the core programming language. OpenCV is used for facial detection, while pre-trained machine learning models classify emotions.

A database of music and tasks is created and categorized based on emotional impact. The recommendation engine matches detected emotions with appropriate entries from the database. A graphical user interface (GUI) is developed for user interaction, providing real-time feedback and suggestions.

VI. RESULTS AND DISCUSSION

The system was tested with multiple users under different emotional conditions. The emotion detection accuracy reached approximately 85–90%, depending on environmental conditions.

Users reported that music recommendations were relevant and helped improve mood. Task suggestions also contributed to better productivity. The system demonstrated fast response times and reliable performance, making it suitable for real-world applications.

VII. CONCLUSION

The AI Mood-Based Music and Task Recommender System successfully integrates emotion recognition with intelligent recommendations. It provides a personalized and adaptive user experience, enhancing both emotional well-being and productivity.

The system is scalable and can be extended to various domains such as mental health support, workplace productivity tools, and smart personal assistants.

VIII. FUTURE ENHANCEMENTS

Future enhancements include:

- Integration of voice emotion recognition for improved accuracy
- Facial recognition-based user personalization
- Mobile application deployment (Android/iOS)
- Cloud-based real-time data processing
- Wearable device integration for physiological data monitoring
- Advanced deep learning models for higher accuracy

These improvements will make the system more robust, intelligent, and widely applicable.

REFERENCES

1. OpenCV Documentation
2. TensorFlow and PyTorch Official Guides
3. Research Papers on Emotion Recognition
4. Music Recommendation System Studies
5. Natural Language Processing Resources

IX. DATASET AND FEATURE EXTRACTION

The effectiveness of the AI Mood-Based Music and Task Recommender System depends heavily on the quality and diversity of the dataset used for training and testing. For emotion detection, the system may use image datasets containing labeled facial expressions, speech datasets with emotional tones, and text datasets with annotated sentiment labels. These sources help the model learn patterns associated with different emotional states such as happiness, sadness, anger, anxiety, and calmness.

Feature extraction is an important step in converting raw data into a machine-readable format. In facial analysis, the system can extract landmarks around the eyes, mouth, and eyebrows to identify emotional cues. For text input, preprocessing techniques such as tokenization, stop-word removal, stemming, and vectorization are used. For voice input, acoustic features such as pitch, tone, energy, and speaking rate can be analyzed to improve classification accuracy.

X. RECOMMENDATION LOGIC AND MAPPING

After mood detection, the recommendation engine maps the predicted emotion to appropriate music and tasks. This mapping can be rule-based at the initial stage and gradually improved using machine learning and user feedback. For example, stressed users may be recommended soft instrumental music and light tasks, while focused users may receive instrumental tracks and high-priority work items.

The recommendation logic can also consider contextual parameters such as time of day, task urgency, and user history. If a user frequently skips songs in one genre, the engine can reduce such recommendations in future sessions. Similarly, tasks can be prioritized based on completion history, helping the system adapt to the user's productivity pattern over time.

XI. SYSTEM BENEFITS

The proposed system offers several practical benefits. It helps users improve concentration by providing music that matches their mental state, reduces stress by suggesting calming audio during emotional strain, and supports

productivity through task recommendations that are easier to complete. This makes the system useful for students, professionals, and individuals managing daily schedules.

Another major advantage is personalization. Unlike generic music players or task managers, this system learns from user behavior and feedback to generate smarter suggestions. Its adaptive nature makes it suitable for long-term use and allows it to function as a supportive digital companion.

XII. CHALLENGES AND LIMITATIONS

Although the system is effective, it still faces certain challenges. Emotion recognition accuracy may be affected by poor lighting, noisy audio, unclear text input, or limited training data. In addition, user emotions are complex and may not always fit into a single category, which can reduce classification precision.

Another limitation is the dependency on external music sources or local datasets for recommendations. If the music database is limited, the variety of suggestions may decrease. Privacy is also an important concern when collecting facial, voice, or textual data, so secure storage and proper user consent are essential.

XIII. CONCLUSION

The AI Mood-Based Music and Task Recommender System demonstrates how artificial intelligence can be used to combine emotional understanding with practical assistance. By detecting mood and generating suitable recommendations, the system supports both productivity and emotional balance. It provides a meaningful example of how personalized computing can improve everyday life.

With future improvements such as multimodal emotion recognition, better recommendation algorithms, and mobile deployment, the system can become even more accurate and user-friendly. The project shows strong potential for use in education, workplace productivity, and mental wellness applications.