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Project 5

MoodforMusic (An Intelligent Mood Detection and Music Recommendation Application)

Problem Statement:

The objective of this project is to build an application that detects the mood of users using still images or videos and recommends music accordingly. The system will use image or video analysis to infer the user's mood and provide personalized music recommendations to enhance their emotional experience.

Focus Areas:

- **Image/Video Analysis**: Develop algorithms to analyze still images or videos and extract mood-related features.
- **Mood Classification:** Create a machine learning model that classifies the user's mood based on the extracted features.
- **Music Recommendation:** Build a music recommendation engine that suggests music based on the user's mood classification.
- **User Interface:** Design an intuitive and user-friendly interface to capture images/videos and display music recommendations.

Deliverables:

- A report (PDF) detailing:
- Description of design choices and Performance evaluation of the model
- User Interface
- Comprehensive Documentation
- Source Code
- Discussion of future work

Tasks/Activities List:

- **Data Collection:** Gather a diverse dataset of images/videos representing various moods.
- **Image/Video Preprocessing:** Clean, resize, and normalize the images/videos for analysis.

- **Feature Extraction:** Develop algorithms to extract mood-related features from the images/videos.
- **Mood Classification Model:** Choose and implement a suitable machine learning algorithm for mood classification.
- **Model Training:** Split the data into training and testing sets. Train the mood classification model.
- **Music Recommendation Engine:** Create a music recommendation system based on mood classifications.
- **User Interface Development:** Design and develop an interactive user interface for mood capture and music recommendations.
- **Integration:** Integrate the image/video analysis, mood classification, and music recommendation components.
- **Testing and Validation:** Evaluate the performance of the system using test data and user feedback.
- **Model Refinement:** Fine-tune the mood classification model and music recommendation engine for better accuracy and effectiveness.
- **Documentation:** Prepare comprehensive documentation explaining the entire project, including the technical aspects and usage instructions.
- **Deployment Plan:** Plan the deployment of the application on a web server or as a mobile app.

Success Metrics:

- **Mood Classification Accuracy:** The mood classification model should achieve an accuracy of >75% on the test dataset.
- **Music Recommendation Effectiveness:** Measure user satisfaction and engagement with the recommended music based on user feedback.
- **Deployment:** The application should be successfully deployed and accessible to users.

Bonus Points:

- Packaging and README: Package the solution with a detailed README explaining installation and execution of the end-to-end pipeline.
- Documentation Quality: Demonstrate strong documentation skills by explaining how the application benefits the users and the company.

Data:

The dataset for this project can be accessed by clicking the link provided below.

MoodforMusic.zip