Project Proposal
Aura Sense - Gender and Mood Recognizer System

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Introduction

The current project makes a system that can detect gender and emotions from voice and image data in real time, offering insight into the identity and mood of users. These functions can be extended to numerous virtual assistant, security, healthcare, and customer service areas where the recognition of gender and emotional states can be used to personalize and improve user experience. Real-time mood recognition from facial expressions allows even more depth during interactions, making them more contextual and responsive.

Prior work (Research Paper Titles)
1. Analysis of Speech Features for Emotion Detection: A Review
2. Gender Influence on Emotional Recognition using Facial Expressions and Voice
3. Real-Time Facial Expression Recognition using Facial Landmarks and Neural Networks

Project Goals
1. Data Collection & Preprocessing: Gather labeled male and female voice clips and image features (e.g., facial landmarks). Perform feature extraction (pitch, formants, MFCC) for classification.
2. Model Development & Training: Build a classifier (e.g., decision tree, SVM, neural network) to differentiate between male and female voices. Optimize using metrics like precision, recall, or F1-score.
3. Mood Recognition (Extension): Research mood recognition features (e.g., prosody, pitch variation). Implement and test mood classification as an extension.
4. Final Deliverable: A trained gender recognition model with mood detection capabilities, integrated into a demo interface. Provide documented code and a final report.

Deliverables
1. Model & Source Code: The final deliverable will be a real-time gender and mood detection system, capable of processing both voice and image inputs.
2. Documentation: A GitHub repository with source code, instructions, and a final report.
3. Progress Updates: Regular reports on data collection, model development, and mood detection extension.

Conclusion

This project explores voice recognition, image classification and machine learning, aiming to develop a robust gender recognition system with potential for mood detection. This project is both feasible and impactful, with the potential to improve user experiences through intelligent and empathetic system interactions across various applications.