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## **Abstract for Speech Emotion Recognition**

### **Title: Speech Emotion Recognition Using Machine Learning**

#### **Abstract:**

Speech Emotion Recognition (SER) is the task of identifying human emotions from speech signals. It has significant applications in human-computer interaction, healthcare, entertainment, and more. In this project, we aim to develop a machine learning model that can classify speech into various emotional categories, such as happiness, sadness, anger, and neutral. The model will utilize audio features like Mel Frequency Cepstral Coefficients (MFCCs), chroma, and mel spectrograms extracted from speech signals. We will employ a dataset containing labeled audio clips and train a neural network classifier using deep learning techniques. The performance of the model will be evaluated using accuracy, precision, recall, and F1-score metrics. The goal of this project is to enhance human-computer interactions by incorporating emotional understanding into AI systems.

#### **Objectives:**

1. To extract meaningful audio features from speech data.
2. To classify emotions such as happy, sad, angry, and neutral using machine learning models.
3. To evaluate the performance of different algorithms in recognizing emotions from speech.

#### **Methodology:**

1. **Data Collection:** We will use existing speech datasets, such as the RAVDESS dataset, which contains labeled speech recordings with emotions.
2. **Preprocessing:** Audio files will be processed to extract features like MFCCs, chroma, and mel spectrograms.
3. **Modeling:** Machine learning models (e.g., CNNs, SVM) will be trained on the extracted features to classify emotions.
4. **Evaluation:** The models will be evaluated using metrics like accuracy, precision, recall, and F1-score.