Speech Emotion Recognition

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Project Description:

Emotion recognition helps in monitoring and understanding human emotion, which is important for both existing and upcoming computational technologies. Speech emotion recognition is a demonstration of the ability to recognize emotional states and human feelings from speech. The experiments take neutral, happy, and sad into consideration. Physical traits including muscle tension, skin elasticity, blood pressure, heart rate, breathing, speech, etc. have a major impact on a person's emotions. Although each person's emotions are distinct in nature, they can nevertheless be understood, perceived, and reflected in different ways. Python libraries are used to do this investigation.

Objective:

- In this project, we attempt to use deep learning to recognize the emotions from data.

Use Cases:

- It can be used in call centers for classifying calls according to emotions. It can be used as the performance parameter for conversational analysis thus identifying the unsatisfied customer, customer satisfaction and so on. For helping companies improve their services.

- It can also be used in-car board systems based on information on the mental state of the driver can be provided to the system to initiate his/her safety preventing accidents from happening.

Machine learning Algorithms used are :

- Convolutional neural networks (CNN)
- Support Vector Machine (SVM)
- K-Nearest Neighbour (KNN)
- Multilayer Perceptron Neural Network (MLPNN)

Datasets:

https://www.kaggle.com/datasets/uwrfkaggler/ravdess-emotional-speech-audio

https://www.kaggle.com/datasets/ejlok1/cremad

References:

- N. Susithra, K. Rajalakshmi, P. Ashwath, B. Ajay, D. Rohit, S. Stewaugh, "Speech-based Emotion Recognition and Gender Identification using FNN and CNN Models", *2022 3rd International Conference for Emerging Technology (INCET)*, pp.1-6, 2022.

- P. A. Babu, V. Siva Nagaraju and R. R. Vallabhuni, "Speech Emotion Recognition System With Librosa," *2021 10th IEEE International Conference on Communication Systems and Network Technologies (CSNT)*, Bhopal, India, 2021, pp. 421-424, doi: 10.1109/CSNT51715.2021.9509714.