Our project explores **emotion detection from speech data**, focusing on identifying and classifying emotions like happiness, sadness, anger, and fear based on vocal expressions. Using machine learning techniques, we aim to create a model that can accurately detect emotions from voice recordings. This research holds significant relevance in enhancing human-computer interaction, healthcare diagnostics, and AI-powered customer service. The primary **SMART question** guiding our project is: Can we build a reliable model that effectively classifies emotions using voice features from diverse datasets? Additionally, we are investigating the accuracy of the model across various emotional categories, aiming to improve detection precision in real-world applications.

We have utilized four well-known public datasets for this project: **CREMA, RAVDESS, SAVEE, and TESS,** which together provide around **7,500** samples of speech data containing emotional expressions. These datasets offer a diverse range of emotions and accents, making them suitable for developing a robust model. Our approach involves extracting relevant features from the audio samples, followed by training and testing machine learning models to achieve optimal classification results. By analyzing the performance of the model, we aim to enhance its usability in practical applications. For further details on our methodology, data processing, and results, you can access our project’s code and documentation through our team’s GitHub repository: <https://github.com/Dhwanil25/Project-1_Data_Science> . The project is being developed with a strict timeline to ensure timely completion and validation of results.