Walchand College of Engineering, Sangli.

(An Autonomous Institute)

Department
Of
Computer Science and Engineering

TY CSE Mini Project-III
Report
On

"Speech Emotion Recognition"

Submitted by

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Pratik Babaso Chougule **(2019BTECS00102)**
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Under the Guidance
of

Mrs. P. D. Lanjewar
Guide
Computer Science & Eng. Dept,
WCE, Sangli.

2021-2022

Walchand College of Engineering, Sangli
(An Autonomous Institute)

Department
Of
Computer Science and Engineering

CERTIFICATE

This is to certify that the Project Report entitled, **"Speech Emotion Recognition"** submitted by Mr. Omkar Patil, Mr. Pratik Chougule, Mr. Pravin Lokhande to Walchand College of Engineering, Sangli, India, is a record of bonafide Project work of course "5CS347" *"Mini Project-3"* carried out by them under my supervision and guidance and is worthy of consideration for the award of the degree of Bachelor of Technology in Computer Science & Engineering of the Institute.

Mrs. P. D. Lanjewar	**Dr. M. A. Shah**
Guide	Head Of Department
Computer Sci. & Eng. Dept,	Computer Sci.& Eng. Dept,
WCE, Sangli.	WCE, Sangli

Acknowledgement

We would like to express our special thanks of gratitude to our guide Mrs P. D. Lanjewar mam as well as our HOD Dr. M. A. Shah who gave us the golden opportunity to do this wonderful project on the topic “Speech Emotion Recognition”, which also helped us in doing a lot of research and we came to know about so many new things. We are thankful to them.

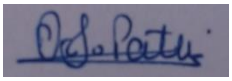
Secondly, we would also like to thank the teammates who worked together in finishing this project within limited time. Finally, thanks to all who supported the project.

Declaration

I hereby declare that work presented in this project report titled "**SPEECH EMOTION RECOGNITION"** submitted by me in the partial fulfillment of the requirement of the award of the degree of **Bachelor of Technology (B. Tech)** Submitted in the **Department of Computer Science & Engineering, Walchand College of Engineering, Sangli**, is an authentic record of my project work carried out under the guidance of Mrs. P. D. Lanjewar mam.

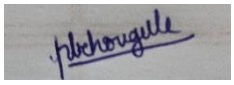
Date:
10-06-2022

Place: Sangli



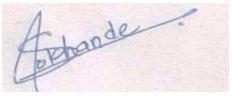
Omkar Patil

2019BTECS00104



Pratik Chougule

2019BTECS00102



Pravin Lokhande

2019BTECS00084

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1 Project title

Speech Emotion Recognition

2 Abstract

Emotion recognition from speech signals is an important but challenging component of Human-Computer Interaction (HCI). In the literature of speech emotion recognition (SER), many techniques have been utilized to extract emotions from signals, including many well-established speech analysis and classification techniques. The goal of the human interface is to recognize the user's emotional state precisely. In the speech emotion recognition study, the most important issue is the effective parallel use of the extraction of proper speech features and an appropriate classification engine.

3 Introduction and Related work

As human beings' speech is amongst the most natural way to express ourselves. We depend so much on it that we recognize its importance when resorting to other communication forms like emails and text messages where we often use emojis to express the emotions associated with the messages. As emotions play a vital role in communication, the detection and analysis of the same is of vital importance in today's digital world of remote communication.

Emotion detection is a challenging task, because emotions are subjective. There is no common consensus on how to measure or categorize them. We define a SER system as a collection of methodologies that process and classify speech signals to detect emotions embedded in them. Such a system can find use in a wide variety of application areas like interactive voice based-assistant or caller-agent conversation analysis. In this study we attempt to detect underlying emotions in recorded speech by analyzing the acoustic features of the audio data of recordings.

This system can also inspire people to interact with machines. This topic will help people to be interactive despite the challenges they face. This topic provides us indirect feedback from the users by analyzing their voice.

Many works have been done regarding this topic. Many algorithms like SVM, DNN, CNN, RNN have been implemented previously. Here, we are going to focus on three algorithms namely MLP Classifier, CNN, and LSTM.

4 Problem statement

To create a platform which helps to predict the emotion of the users from their speech.

5 Objectives

5.1. To study the concepts of Deep Learning, Librosa and Python.

5.2. To collect the Dataset.

5.3. To train and test the model using the dataset.

5.4. To check and maintain the accuracy of the model.

6 Methodology

1) **Requirement Gathering**: Discuss with the Guide and clarify the requirements of theproject. Discussing with students what material they need.
2) **Design the requirements**: Create flowcharts and diagrams for requirements confirmation. Creating wireframes for the project.
3) **Construction:** The Project will be done in levels. Planned Sprints will be used for developing and testing the product. The planning phase include the overall developmentof the project. Here, we will build the model for prediction and train it.
4) **Quality assurance**: Here, we will test the model we built to check its accuracy and work on its improvement.

Technology Stack:

Python [1]

Librosa [2]

Jupyter Lab [3]

CNN [4]

Flask Framework [5]

7. Project diagrams

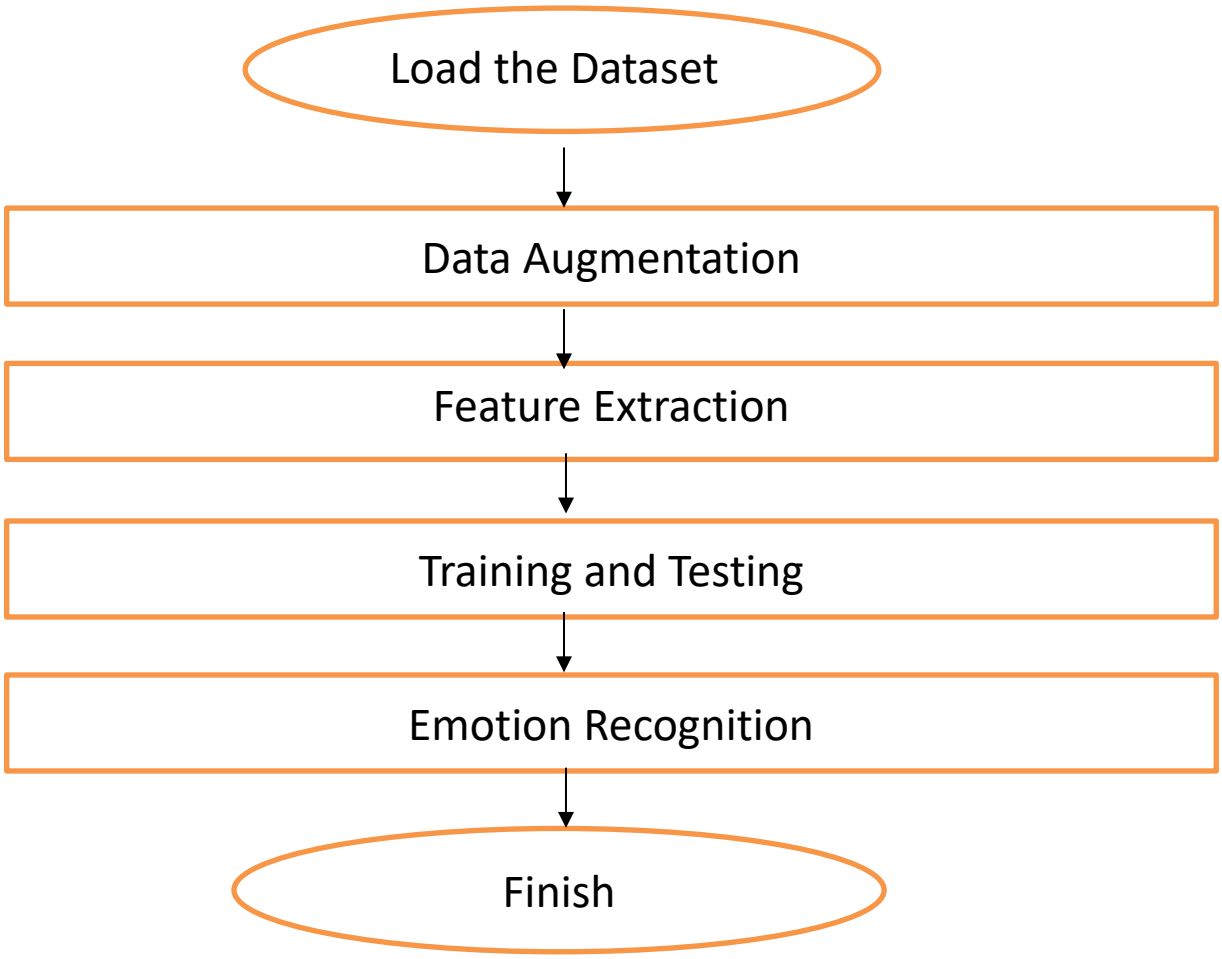


Fig 1. Flowchart of the application

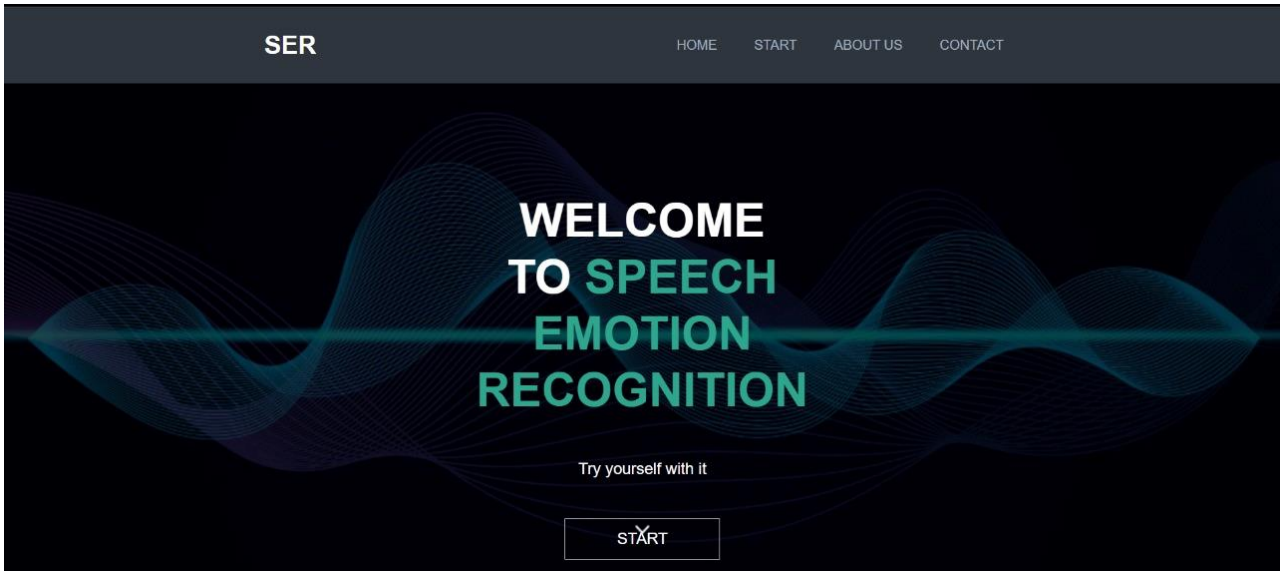


Fig 2.

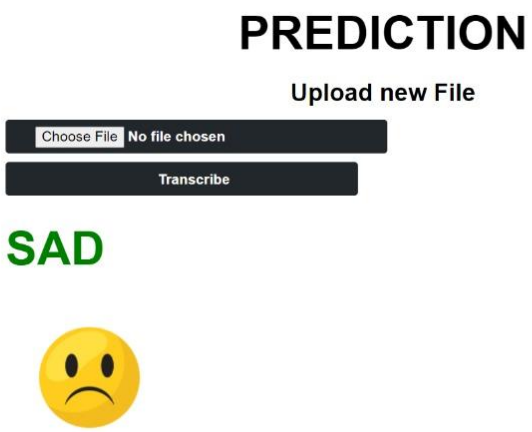


Fig 3.

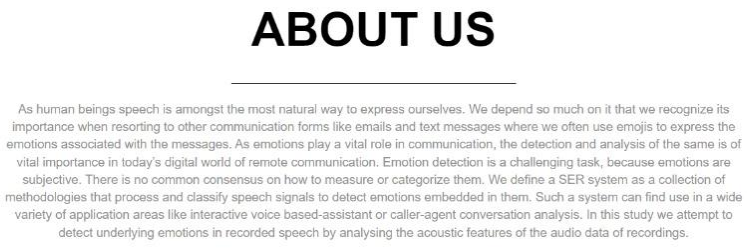
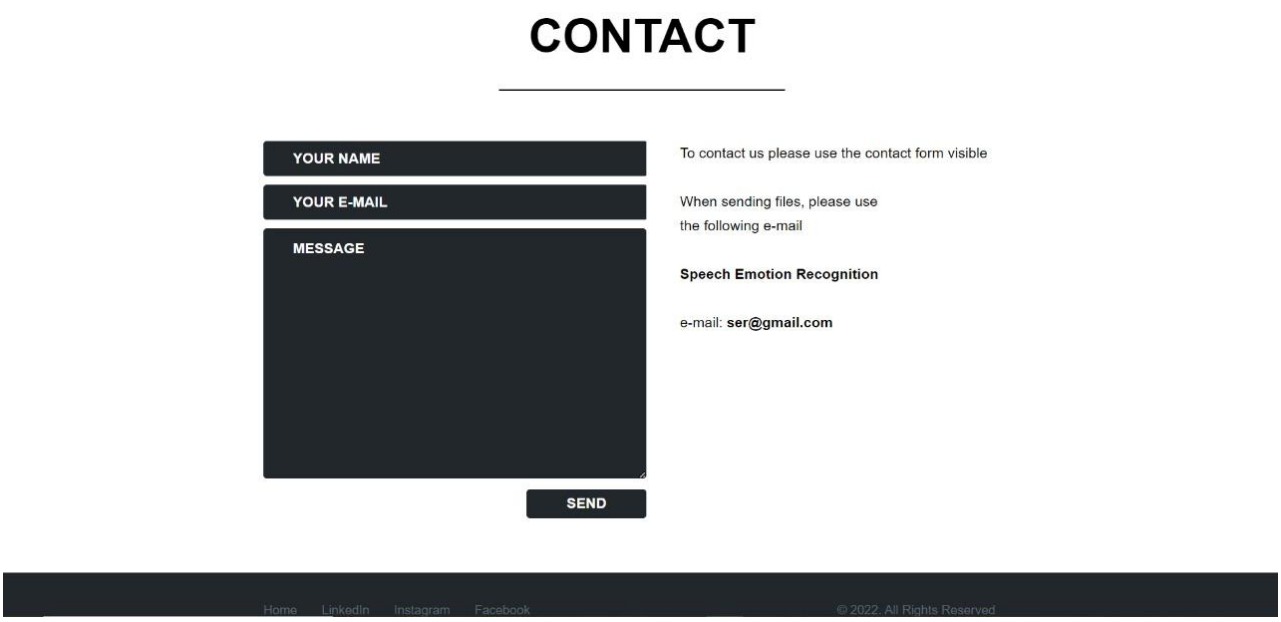


Fig 4.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When sending files, please use
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Fig 5.

8. Outcomes and Applications

1) The medical field: In the world of telemedicine where patients are evaluated over mobile platforms, the ability for a medical professional to discern what the patient is actually feeling can be useful in the healing process.
2) Customer service: In call center conversation may be used to analyze the behavioral study of call attendants with the customers which helps to improve the quality of service.
3) Emotion Recognition serves as the performance parameter for conversational analysis, thus identifying the unsatisfied customer, customer satisfaction so on
4) It will help in improving Human-Computer Interaction.

9. Results and Discussion

1. Deep learning can be used effectively to predict the emotions of the users.
2. This model will be beneficiary in certain sectors and will be user-friendly.
3. Using the proposed model, we can classify number of emotions.

10. References

[1] https://www.ijrte.org/wp-content/uploads/papers/v7i4s/E1917017519.pdf

[2] https://en.wikipedia.org/wiki/Deep_learning

[3] https://ieeexplore.ieee.org/abstract/document/8805181

[4] https://smartlaboratory.org/ravdess/

Annexure A
Minutes of meeting team members

Sr.No	Day, Date and time of meeting	Discussion regarding (SRS, implementation, testing, problems during implementation, progress review etc.)	Meeting Summary
1	5/02/2022	Topic	Selecting topic of the project
2	7/02/2022	Requirements	Requirements gathering of project
3	12/02/2022	Progress Review	Requirements Verification and Proposal of ideas
4	23/03/2022	Progress Review and Problem discussion	Working on the model for prediction.
5	7/04/2022	Implementation and progress review	Working on the web page along with the model
6	3/05/2022	Final Overview	Final work of the project