

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

JNANA SANGAMA, BELAGAVI – 590 018



A Project Report on

EMOTIONIX

Submitted in partial fulfillment of the requirements for the VII Semester of degree
of **Bachelor of Engineering in Artificial Intelligence and Machine Learning** of
Visvesvaraya Technological University, Belagavi

Submitted By

Manohar P	1RN21AI069	Nandish Reddy J	1RN21AI076
Nishanth K P	1RN21AI083	Partha BP	1RN21AI088

Under the Guidance of

Dr. Mamatha SK

Assistant Professor

Department of AI & ML



ESTD: 2001

An Institute with a difference

Department of Artificial Intelligence and Machine Learning

RNS Institute of Technology

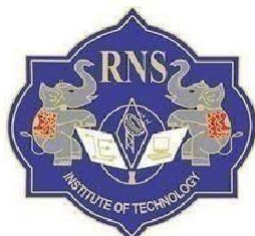
Autonomous Institution, Affiliated to VTU, Recognized by GOK, Approved by AICTE
(NAAC 'A+ Grade' Accredited, NBA Accredited (UG - CSE, ECE, ISE, EIE and EEE))
Channasandra, Dr. Vishnuvardhan Road, Bengaluru - 560 098 Ph:(080)28611880,28611881
URL: www.rnsit.ac.in

2024-2025

RNS INSTITUTE OF TECHNOLOGY

Autonomous Institution, Affiliated to VTU, Recognized by GOK, Approved by AICTE (NAAC
'A+ Grade' Accredited, NBA Accredited (UG - CSE, ECE, ISE, EIE and EEE) Channasandra,
Dr. Vishnuvardhan Road, Bengaluru - 560 098 Ph:(080)28611880,28611881 URL:
www.rnsit.ac.in

DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING



ESTD: 2001

An Institute with a difference

CERTIFICATE

Certified that the project work entitled *Emotionix* has been successfully completed by **Manohar P (1RN21AI069)**, **Nandish Reddy J (1RN21AI076)**, **Nishanth K Poojari (1RN21AI083)** and **Partha BP (1RN21AI088)**, bonafide students of **RNS Institute of Technology, Bengaluru** in partial fulfillment of the requirements for the award of degree in **Bachelor of Engineering in Artificial Intelligence and Machine Learning of Visvesvaraya Technological University, Belagavi** during the academic year **2024-2025**. The project report has been approved as it satisfies the academic requirements in respect of project work for the said degree.

Dr. Mamatha SK

Asst Prof.
Dept of AIML

Dr. Andhe Pallavi

Prof. and HOD
Dept. of AIML

Dr. Ramesh Babu H S

Principal

External Viva

Name of the Examiners

Signature with Date

1. _____

1. _____

2. _____

2. _____

DECLARATION

We, **Manohar P** [1RN21AI069], **Nandish Reddy J** [1RN21AI076], **Nishanth K Poojari** [1RN21AI083], **Partha BP** [1RN21AI088] students of VII Semester BE, in Artificial Intelligence and Machine Learning Engineering, RNS Institute of Technology hereby declare that the Project entitled *EMOTIONIX* has been carried out by us and submitted in partial fulfillment of the requirements for the VII Semester of degree of *Bachelor of Engineering in Artificial Intelligence and Machine Learning* of Visvesvaraya Technological University, *Belagavi* during academic year 2024- 2025.

Place: Bengaluru

Date:

Manohar P (1RN21AI069)

Nandish Reddy J (1RN21AI076)

Nishanth K Poojari (1RN21AI083)

Partha BP (1RN21AI088)

ACKNOWLEDGMENT

At the very onset, we would like to place our gratefulness to all those people who helped us in making this project a successful one.

Coming up with this project to be a success was not easy. Apart from the sheer effort, the enlightenment of our very experienced teachers also plays a paramount role because it is they who guide us in the right direction.

First of all, we would like to thank the **RNS Trust** for providing such a healthy environment for the successful completion of project work.

I would like to express my thanks to **Dr. M K Venkatesha**, Director, RNSIT for his support and inspired me towards the attainment of knowledge.

In this regard, we express our sincere gratitude to **Dr. Ramesh Babu H S**, Principal, RNSIT for providing us with all the facilities in this college.

We are extremely grateful to **Dr. Andhe Pallavi**, Professor and Head of the Department of Artificial Intelligence and Machine Learning for having accepted to patronize us in the right direction with all her wisdom.

We place our heartfelt thanks to **Dr. Mamatha SK**, Assistant Professor, Department of Artificial Intelligence and Machine Learning for having guided the project and all the staff members of our department for helping us out at all times.

We thank **Ms.Seema GS**, Project coordinator, Department of Artificial Intelligence and Machine Learning for supporting and guiding us all through.

We thank our beloved friends for having supported us with all their strength and might. Last but not the least; we thank our parents for supporting and encouraging us throughout. We made an honest effort in this assignment.

MANOHAR P
NANDISH
NISHANTH KP
PARTHA BP

ABSTRACT

Emotionix is an advanced emotion analysis system designed to detect and interpret human emotions from text, voice, and video inputs, providing personalized feedback and recommendations. Leveraging state-of-the-art machine learning and deep learning techniques, Emotionix captures subtle emotional cues, enabling accurate emotion detection and context-aware responses.

The system integrates multiple modalities—text analysis for sentiment detection, voice analysis for tonal emotion extraction, and video processing for facial expression recognition—ensuring a comprehensive understanding of user emotions. A robust recommendation engine further enhances the user experience by delivering tailored suggestions based on detected emotions, fostering well-being, and promoting positive engagement.

Emotionix stands out for its scalability, security, and usability, making it adaptable for various applications, including mental health, customer service, and interactive AI systems. Through rigorous validation testing and innovative methodologies, Emotionix provides an efficient, user-friendly, and impactful tool for emotion-based interaction and feedback.

TABLE OF CONTENTS

CERTIFICATE	
DECLARATION	i
ACKNOWLEDGEMENT	ii
ABSTRACT	iii
TABLE OF CONTENTS	iv
LIST OF FIGURES	vi
LIST OF TABLES	vii
LIST ABBREVIATIONS	viii
1. INTRODUCTION	01
1.1 Background	01
1.2 Existing Systems and their Limitations	02
1.3 Proposed System and Its advantages	03
2. LITERATURE SURVEY	04
3. ANALYSIS	10
3.1 Problem Statement	10
3.2 Objectives	10
3.2.1 Aims of project	11
3.3 Methodology	12
3.4 Requirement Specifications	13
3.4.1 System Hardware Requirements	13
3.4.2 System Software Requirements	13
3.5 Functional Requirement	14
3.6 Non-Functional Requirement	14
4. SYSTEM DESIGN	15
4.1 System Architecture	15
4.2 Detailed Design	18
4.2.1 Front End: Dash for UI	18
4.2.2 Backend	19

TABLE OF CONTENTS

4.2.3 API's Used	21
4.3 High Level Design	22
4.4 Low Level Design	22
4.5 Data flow Diagram	23
4.6 Use case Diagram	24
5. IMPLEMENTATION	26
5.1 Overview of System Implementation	26
5.2 Algorithm	28
5.2.1 Preprocessing Algorithm	28
5.2.2 Emotion Classification Algorithm	29
5.2.3 Training the model	29
5.2.4 Performance Evaluation	29
5.3 Pseudocode	30
5.4 Pseudocode of models	35
5.4.1 Pseudocode for text emotion detection	35
5.4.2 Pseudocode for speech emotion detection	36
5.4.3 Pseudocode for video emotion detection	37
6. TESTING	39
6.1 Unit Testing	40
6.2 System Testing	41
6.3 Validation Testing	42
7. DISCUSSION OF RESULTS	44
7.1 Summary	48
8. CONCLUSION AND FUTURE WORK	49
REFERENCES	50

LIST OF FIGURES

Figure No	Descriptions	Page
4.1	System Architecture	15
4.2	API general Architecture	17
4.3	Dash model for UI	18
4.5	Data flow Diagram	23
4.6	Use Case Diagram	24
5.4.1	Text emotion detection Pseudocode	35
5.4.2	Speech emotion detection Pseudocode	36
5.4.3	Video emotion detection Pseudocode	37
6.1	Home Page	41
6.3	Validation Testing	42
7.1	Emotion detection in text	44
7.2	Emotion detection using voice	44
7.3	Emotion detection using video	45
7.4	Chatbot	46
7.5	Recommendation System	46
7.6	Spotify and video recommendation	47

LIST OF TABLES

Table No	Descriptions	Page
2.1	Literature Review Summary	8
6.1	Unit Test cases for Prediction system	39

LIST OF ABBREVIATIONS

OpenCV	- Open Computer Vision
ML	- Machine Learning
SVM	- Support Vector Machine
LSTM	- Long Short-Term Memory
SVC	- Support Vector Classifier
NLTK	- Natural Language Toolkit