EMOTIONAL BASED MEDIA PLAYBACK AND STRESS MONITORING SYSTEM FOR AUTISM

# A PROJECT REPORT

***Submitted by***

**SREENIDHYEE.E [211418104260]**

**SRINITHEKA.T [211418104264]**

**SUVETHA.J [211418104282]**

***In partial fulfillment for the award of the degree***

***of***

**BACHELOR OF ENGINEERING**

**IN**

# COMPUTER SCIENCE AND ENGINEERING

# C:\Users\DSILAS.EEE\Downloads\PANIMALAR.jpg

**PANIMALAR ENGINEERING COLLEGE, CHENNAI-600025**

**(An Autonomous Institution, Affiliated to Anna University, Chennai)**

**MAY 2022**

# PANIMALAR ENGINEERING COLLEGE

###### **(An Autonomous Institution, Affiliated to Anna University, Chennai)**

**BONAFIDE CERTIFICATE**

Certified that this project report **“EMOTIONAL BASED MEDIA PLAYBACK AND STRESS MONITORING SYSTEM FOR AUTISM”** is the bonafide work of **“SREENIDHYEE.E [REGNO:211418104260] and SRINITHEKA.T [REGNO:211418104264] and SUVETHA.J [REGNO:211418104282]”** who carried out the project work under my supervision.

# SIGNATURE SIGNATURE

**Dr.S.MURUGAVALLI, M.E,Ph.D. Mrs.A.KANCHANA.M.E HEAD OF THE DEPARTMENT SUPERVISOR**

# ASSISTANT PROFESSOR

DEPARTMENT OF CSE, DEPARTMENT OF CSE,

PANIMALAR ENGINEERING COLLEGE, PANIMALAR ENGINEERING COLLEGE, NASARATHPETTAI, NASARATHPETTAI,

POONAMALLEE, POONAMALLEE,

CHENNAI-600 123. CHENNAI-600 123.

Certified that the above candidate(s) was/ were examined in the Anna University Project Viva-Voce Examination held on...........................

# INTERNAL EXAMINER EXTERNAL EXAMINER

**DECLARATION**

We SREENIDHYEE E (211418104260), SRINITHEKA T (211418104264), SUVETHA J (211418104282) hereby declare that this project report titled “Emotional Based Media Playback and Stress Monitoring System for Austism”, under the guidance of Mrs.A.Kanchana, M.E. is the original work done by us and we have not plagiarized or submitted to any other degree in any university by us.

# SREENIDHYEE.E

# SRINITHEKA.T

# SUVETHA.J

**ACKNOWLEDGEMENT**

We express our deep gratitude to our respected Secretary and Correspondent **Dr. P.CHINNADURAI, M.A., Ph.D.** for his kind words and enthusiastic motivation, which inspired us a lot in completing this project.

We would like to extend our heartfelt and sincere thanks to our Directors **Tmt.C.VIJAYARAJESWARI**, **Dr.C.SAKTHIKUMAR,M.E.,Ph.d**

and **Tmt. SARANYASREE SAKTHIKUMAR B.E.,M.B.A.** for providing us with the necessary facilities for completion of this project.

We also express our gratitude to our Principal **Dr.K.Mani, M.E., Ph.D.** for his timely concern and encouragement provided to us throughout the course.

We thank the HOD of CSE Department ,**Dr. S.MURUGAVALLIM.E.,Ph.D**

for the support extended throughout the project.

We would like to thank my **Project Guide Mrs. A.KANCHANA,M.E.** and all the faculty members of the Department of CSE for their advice and suggestions for the successful completion of the project.

# SREENIDHYEE.E

# SRINITHEKA.T

# SUVETHA.J

**ABSTRACT**

Nowadays Autism children find it difficult to interact socially with people's emotions and make themselves isolated. This project proposes Emotion detection for Autism spectrum disorder children (ASD). It is self-possessed of python libraries Open CV, Haar-cascade method to predict face. Conversely, most existing methods rely on the detection of facial expressions of people on social media platforms such as Snapchat uses facial recognition technology, and also detects facial emotions from their Facial expressions in the image. And for better involvement in the children’s social behavior, here a face is captured in real-time, and emotions are predicted by Facial expression recognition (FER). This proposed system helps to improve Autism children’s behavior as they often observe their facial expressions and predict their facial emotions. If the Predicted facial Emotion is happy, then we will play some Interesting Audio to them using AT mega Microcontroller, which will keep them relaxed and will help them to learn interactively. Along With that we have designed and built a stress sensor based on Galvanic Skin Response (GSR), to find their stress level and monitor it over the Internet Using NodeMCU (ESP8266-12E Microcontroller unit).

iii

**TABLE OF CONTENTS**

|  |  |  |
| --- | --- | --- |
| **CHAPTER NO.** | **TITLE** | **PAGE NO.** |
|  | **ABSTRACT** | iii |
|  | **LIST OF TABLES** | vi |
|  | **LIST OF FIGURES** | vi |
|  | **LIST OF ABBREVIATION** | vii |
| **1.** | **INTRODUCTION** | 1 |
|  | 1.1 Overview | 2 |
|  | 1.2 Problem Definition | 2 |
| **2.** | **LITERATURE SURVEY** | 3 |
| **3.** | **SYSTEM ANALYSIS** | 14 |
|  | 3.1 Existing System | 15 |
|  | 3.2 Proposed system | 15 |
|  | 3.3 Feasibility Study | 16 |
|  | 3.4 Hardware Environment  3.5 Software Environment | 18  23 |

|  |  |  |
| --- | --- | --- |
| **CHAPTER NO.** | **TITLE** | **PAGE NO.** |
| **4.** | **SYSTEM DESIGN** | 25 |
|  | 4.1 ER Diagram | 26 |
|  | 4.2 Data Dictionary  4.3 Data Flow Diagram | 27  28 |
|  | 4.4 UML Diagrams | 29 |
| **5.** | **SYSTEM ARCHITECTURE** | 33 |
|  | 5.1 Module Design Specification | 36 |
|  | 5.2 Algorithms | 43 |
| **6.** | **SYSTEM IMPLEMENTATION** | 44 |
|  | 6.1 Coding | 45 |
| **7.** | **SYSTEM TESTING** | 54 |
|  | 7.1 Performance analysis | 55 |
|  | 7.2 Result and Discussions | 55 |
| **8.** | **CONCLUSION** | 56 |
|  | 8.1 Conclusion and Future Enhancements |  |
|  | **APPENDICES** |  |
|  | A.1 Sample Screenshots | 58 |
|  | **REFERENCES** | 66 |
|  |  |  |

# LIST OF TABLES

|  |  |  |
| --- | --- | --- |
| **TABLE NO** | **TABLE DESCRIPTION** | **PAGE NO** |
| 4.2 | Data dictionary | 27 |

**LIST OF FIGURES**

|  |  |  |
| --- | --- | --- |
| **FIG NO.** | **FIGURE DESCRIPTION** | **PAGE NO.** |
| 4.1 | ER DIAGRAM | 26 |
| 4.3  4.4.1 | DATA FLOW DIAGRAM  USE CASE DIAGRAM | 28  29 |
| 4.4.2 | ACTIVITY DIAGRAM | 30 |
| 4.4.3 | CLASS DIAGRAM | 31 |
| 4.4.4 | SEQUENCE DIAGRAM | 32 |
| 5 | SYSTEM ARCHITECTURE | 35 |

# LIST OF ABBREVIATION

|  |  |  |
| --- | --- | --- |
| **S.NO** | **ABBREVIATON** | **EXPANSION** |
| 1. | CNN | Convolution Neural Network |
| 2. | UML | Unified Modeling Language |
| 3.  4.  5. | GSR  ASD  FER | Galvanic Skin Response  Autism Spectrum Disorder  Facial Expression Recognition |