SWAMINARAYAN INSTITUTE OF TECHNOLOGY, BHAT

Gandhinagar – Ahmedabad Rd, Near EDI & Sardar Patel Ring Road Circle, Bhat, Gandhinagar, Gujarat 352428

<u>CERTIFICATE</u>

*This is to certify that the project reports, submitted along with the project entitled "**MindGuard AI: Unveiling Alzheimer Using magnetic resonance image**" has been carried out by **Ayush Panchal (201250107019)** under my guidance in fulfilment for the degree of **Bachelor of Engineering** in **Computer Engineering (8 Semester)** of Gujarat Technological University, Ahmedabad during the academic Year **2023-24.** This student has successfully completed project activity under my Guidance.*

Prof. Darshan P. Patel	**Prof. Nirajkumar Thakor**	**Prof. Darshan P. Patel**
Internal guide	Project Coordinator	Head of Department
Head of Department I.T.	Computer Engineering	Computer Engineering
SSIT, Bhat, Gandhinagar	SSIT, Bhat, Gandhinagar	SSIT, Bhat, Gandhinagar

GUJARAT TECHNOLOGICAL UNIVERSITY

CERTIFICATE FOR COMPLETION OF ALL ACTIVITIES AT ONLINE PROJECT PORTAL

B.E. SEMESTER VIII, ACADEMIC YEAR 2023-2024

Date of certificate generation : 10 May 2024 (19:02:49)

This is to certify that, *Ayush* (Enrolment Number - 201250107019) working on project entitled with *MindGuard AI: Unveiling Alzheimer Using magnetic resonance image* from *Computer Engineering* department of *SHREE SWAMINARAYAN INSTITUTE OF TECHNOLOGY, BHAT, GANDHINAGAR* had submitted following details at online project portal.

Internship Project Report	**Completed**

Name of Student :   Ayush

Name of Guide :   Mr. Darshan Poonambhai Patel

Signature of Student :   _____

*Signature of Guide :   _____

Shree Swaminarayan Institute of Technology, Bhat, Gandhinagar-382428

DECLARATION

*I hereby declare that the PPR Reports, submitted along with the Project Report for the project entitled "**MindGuard AI: Unveiling Alzheimer Using magnetic resonance image**" submitted in fulfilment for the degree of Bachelor of Engineering in "**Computer Engineering**" to Gujarat Technological University, Ahmedabad, is a bonafide record of the project work carried out **at Shree Swaminarayan Institute of Technology, Bhat** under the supervision of "**Prof. Darshan P. Patel**" and that no part of any these PPR & PDE reports has been directly copied from any students' reports or taken from any other source, without providing due reference*

.

Name of The Students	Sign of Students
AYUSH PANCHAL	
(201250107019)	

ACKNOWLEDGEMENT

The successful completion of my "**MindGuard AI: Unveiling Alzheimer Using magnetic resonance image**" project was made possible by the unwavering encouragement, guidance, and support of numerous individuals and institutions. I am deeply grateful to each of them and would like to extend my sincere thanks.

First and foremost, I am highly indebted to **Prof. Darshan P. Patel**, my internal guide, for their invaluable guidance, constant supervision, and necessary support throughout the project. He not only provided technical expertise but also steered me in the right direction, drawing from their wealth of experience. Their encouragement bolstered my confidence and motivated me to work diligently to meet my project goals.

I must also express my gratitude to Prof. Nirajkumar Thakor, who served as project coordinator. Their guidance and support were instrumental in navigating the complexities of the project, and their encouragement spurred me on during challenging times.

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I extend my thanks to all the staff members of the Computer Engineering Department for their cooperation and assistance whenever needed. Additionally, I am grateful to my colleagues for their willingness to share resources and knowledge, which contributed significantly to the project's success.

In conclusion, I am deeply appreciative of the collective effort and support that enabled the successful realization of the MindGuard AI: Unveiling Alzheimer Using magnetic resonance image project.

ABSTARCT

Alzheimer's disease (AD) is the leading cause of dementia in older adults. There is currently a lot of interest in applying machine learning to find out metabolic diseases like Alzheimer's and Diabetes that affect a large population of people around the world. Their incidence rates are increasing at an alarming rate every year. In Alzheimer's disease, the brain is affected by neurodegenerative changes. As our aging population increases, more and more individuals, their families, and healthcare will experience diseases that affect memory and functioning. These effects will be profound on the social, financial, and economic fronts. In its early stages, Alzheimer's disease is hard to predict.

A treatment given at an early stage of AD is more effective, and it causes fewer minor damage than a treatment done at a later stage. Several techniques such as Decision Tree, Random Forest, Support Vector Machine, Gradient Boosting, and Voting classifiers have been employed to identify the best parameters for Alzheimer's disease prediction. Predictions of Alzheimer's disease are based on Open Access Series of Imaging Studies (OASIS) data, and performance is measured with parameters like Precision, Recall, Accuracy, and F1-score for ML models. The proposed classification scheme can be used by clinicians to make diagnoses of these diseases. It is highly beneficial to lower annual mortality rates of Alzheimer's disease in early diagnosis with these ML algorithms. The proposed work shows better results with the best validation average accuracy of 83% on the test data of AD. This test accuracy score is significantly higher in comparison with existing works.

List of Figures