PREDICTION OF DIABETES USING NEURAL NETWORKS

A PROJECT REPORT

Submitted by

DEEBAN N	**(16BCS3009)**
JEYAPUNITHA N	**(16BCS3029)**
MUTHUKUMARAN B	**(16BCS3061)**
RAVIKUMAR R	**(16BCS3079)**

in partial fulfillment for the award of degree

of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

M. KUMARASAMY COLLEGE OF ENGINEERING
(Autonomous Institution affiliated to Anna University, Chennai)
KARUR – 639 113

APRIL 2020

M.KUMARASAMY COLLEGE OF ENGINEERING

(Autonomous Institution affiliated to Anna University, Chennai)

BONAFIDE CERTIFICATE

Certified that this project report **"PREDICTION OF DIABETES USING NEURAL NETWORKS"** is the bonafide work of **"DEEBAN N (16BCS3009), JEYAPUNITHA N (16BCS3029), MUTHUKUMARAN B (16BCS3061), RAVIKUMAR R (16BCS3079)"** who carried out the project work during the academic year 2020 under my supervision. Certified further, that to the best of my knowledge the work reported herein does not form part of any other project report or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

Signature

Dr.P.SANTHI M.E., Ph.D

SUPERVISOR,

Department of Computer Science and Engineering,
M.Kumarasamy College of Engineering,
Thalavapalayam, Karur-639113.

Signature

Dr.S.THILAGAMANI M.E., Ph.D

HEAD OF THE DEPARTMENT,

Department of Computer Science and Engineering,
M.Kumarasamy College of Engineering,
Thalavapalayam, Karur-639113.

This project Report has been submitted for the Project Work Phase II - End Semester viva voce Examination held on _____

INTERNAL EXAMINER **EXTERNAL EXAMINER**

DECLARATION

We affirm that the Project report titled **"PREDICTION OF DIABETES USING NEURAL NETWORKS"** being submitted in partial fulfillment for the award of **Bachelor of Engineering** in **Computer Science and Engineering**, is the original work carried out by us. It has not formed the part of any other project report or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

Signature

DEEBAN N

JEYAPUNITHA N

MUTHUKUMARAN B

RAVIKUMAR R

ACKNOWLEDGEMENT

Our sincere thanks to **Thiru. M.Kumarasamy, Chairman** and **Dr. K. Ramakrishnan B.E., Secretary** of **M. Kumarasamy College of Engineering** for providing extra ordinary infrastructure, which helped us to complete the project in time.

It is a great privilege for us to express our gratitude to our esteemed **Principal Dr.N.Ramesh Babu M.E., Ph.D.,** for providing us right ambiance for carrying out the project work.

We would like to thank our **Dr.S.Thilagamani M.E., Ph.D., Head of Department of Computer Science and Engineering** for her unwavering moral support throughout the evolution of the project.

We offer our whole hearted thanks to our internal guide **Dr.P.Santhi M.E., Ph.D., Associate Professor, Department of Computer Science and Engineering,** for her constant encouragement, kind co-operation, valuable suggestions and support rendered in making our project a success.

We would like to thank our project coordinator, **Mr.K.Prem Kumar B.Tech.,M.E., Assistant Professor, Department of Computer Science and Engineering**, for his kind cooperation and culminating in the successful completion of project work.

We glad to thank all the **Faculty Members** of **Department of Computer Science and Engineering** for extending a warm helping hand and valuable suggestions throughout the project.

Words are boundless to thank **Our Parents and Friends** for their constant encouragement to complete this project successfully.

ABSTRACT

The disease will produce the increased level of glucose which causes inadequate production of insulin in the body. This disease is called diabetes disorder. This disease is not a fatal disease but sometimes it will cause the serious problem of body parts removal especially legs in the body. This will be similar to fatal cause in the body. The removal of body parts will be done only in the extreme level of diabetes. Its incidence rates are increasing alarmingly every year. These serious issues can be prevented if the prior symptoms of the disease are identified. The dataset of the patient will be collected in the hospital. The dataset will have the entire information about the patient. The information about the patient in the report will have the hemoglobin content, plasma glucose, blood pressure, skin thickness and all other details of the patient. The existing system does not provide the prior intimation to the patients as well as to the doctors regarding the future prediction and serious level of diabetes. The idea we have used here is feature selection methods. The feature selection algorithm which we have selected is deep neural networks, coded on Python, which will gather the particular details regarding the patient and also provide more accuracy in the process of predicting the diabetes in the initial stage itself. At the end, we can provide voice based results for disease diagnosis based on the collected data and also intimate the patients by sending SMS, about the seriousness and the tablets need to take for their issues, to the patients.

ABSTRACT WITH PO AND PSO MAPPING

ABSTRACT	PO MAPPING	PSO MAPPING
The disease will produce the high level of glucose in the blood which leads to inadequate production of insulin in the body. This disease is called diabetes mellitus. This disease is not a fatal disease but sometimes it will cause the serious problem of body parts removal especially legs in the body. This will be similar to fatal cause in the body. The removal of body parts will be done only in the extreme level of diabetes. These serious issues can be prevented if the prior symptoms of the disease are identified. The dataset of the patient will be collected in the hospital. The dataset will have the entire information about the patient. The information about the patient in the report will have the hemoglobin content, plasma glucose, blood pressure, skin thickness and all other details of the patient. The existing system does not provide the prior intimation to the patients as well as to the doctors regarding the future prediction and serious level of diabetes. The major idea of this project is to use the feature selection methods. The feature selection algorithm which we have selected is neural networks, which will gather the particular details regarding the patient and also provide more accuracy in the process of predicting the diabetes in the initial stage itself. At the end, we can provide voice based results for disease diagnosis based on the collected data and also intimate the patients by sending SMS, about the seriousness and the tablets need to take for their issues, to the patients.	PO1(3), PO2(3), PO3(3), PO4(3), PO5(3), PO6(3), PO8(3), PO9(3), PO10(3), PO11(3), PO12(3)	PSO1(3), PSO2(3)

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

- ML – Machine Learning
- AI – Artificial Intelligence
- DL – Deep Learning
- NN – Neural Network
- DNN – Deep Neural Network
- CNN – Convocational Neural Network
- ANN – Artificial Neural Network
- HIP – Hyperglycemia In Pregnancy
- IDF – International Diabetes Federation
- KDD – Knowledge Discovery in Database
- SVM – Support Vector Machine
- KNN – K Nearest Neighbor Classifier
- LR – Logistic Regression
- NPV – Negative Predicted Value
- FP rate – False Positive Rate
- RMC – Rate of Misclassification