

Diabetes Detection Using Image Processing Algorithm

Ms. Reshma.R.Owhal, ShubhamVaghasiya, AtharvaTenkale, AkshayPokale

Department of Computer Engineering,
AISSMS Polytechnic
College of Engineering,
Pune, Maharashtra, India

Abstract- Diabetes is a metabolic disease that causes high blood sugar and an untreated high blood sugar can damage your nerves, eyes, kidneys and other organs and to detect the diabetes disease, we propose this methodology to machine learning technique which will be painless to detect diabetes. We're using thermal imaging scans of an eye to illustrate the effect of temperature variation of anomalies in the ocular architecture as a diagnostic imaging modality that can help optometrists make clinical diagnoses. We're using thermo graphy images of an eye to actually prove the caused by thermal variation of abnormalities in the eye structure as a mammography type of therapy that can help optometrists make clinical reasoning. A method through which a computational system understands the characteristics of input information is known as machine learning. Several methodologies have previously been shown to be sensitive enough to detect diabetes. Countless optimization algorithms, with the exception of guided, uncontrolled, and reinforcement instructional strategies, have been developed. Machine learning techniques are powered by data, so this is obviously practical. Our system is using SVM, machine learning algorithm and histogram array values to find the diabetes disease, in data. This project that we have created takes less time and detects diabetes from the entered values.

Keywords- Diabetes, blood sugar etc.

I. INTRODUCTION

Diabetes is chronic diabetes that threatens a large segment of the population globally, now and in the coming. Every year, the prevalence and incidence rise drastically. Diabetes-related problems across several vital organs of the body can be devastating if left untreated. Diabetes should be diagnosed early in addition to receiving appropriate treatment, which can minimize the disease from proceeding to massive consequences.

This study describes a tactical approach for distinguishing hypertension and diabetes artery thickness and conventional data sources, as well as recognizing diabetes, using deep convolution neural. Diabetes affects body in glucose level, skin thickness, blood vessels of retina are affected, blood pressure etc. We take into consideration of the data of these body components. We also employ use of standardized data of previous diabetic data. These data will (SVM) for classification. In total, this system will use also use the data obtained from the image of eye retina as it should be considered as a main factor and then by processing the data, we can show the aftermath from our project

II. IMPACT

Diabetic people in countries, and many countries, not just one, are unaware of their situation. To make matters worse, few people realise that diabetes is a disease that cannot be operated and managed with pharmaceuticals and

that it has a negative impact on the lives of people with diabetes have an increased. Diseases that ought to be diagnosed early because therapeutic procedure can forestall serious negative consequences. When a metabolism issue has been identified, doctors and patients can work together to prevent reputational damage heart problems, kidneys, and eyes., nerves, blood vessels, and other vital organs. If a person has symptoms of diabetes, using our system early can actually have a huge impact on he/she, as he/she will be able to detect diabetes early saving the body from having serious complications. By having an early detection of diabetes one can save his/her health and his/her life and family would not be affected

III. METHODOGLES

In this project, build a software which can detect diabetes from the date which the user enters. The data which users' needs to enters is the image of eye retina and various body components that will be listed further. Diabetes is also caused to vision problems. It reduces blood glucose level in retina. In this software the main functions include classifying the image data by using a histogram then to increase the accuracy of detection we use SVM for further data classification and then the aftermath is shown in results.

1.Image Insertion.

Firstly, when image is uploaded it gets into the converted into grayscale for contrast enhancement and were ready to

go into histogram. The histogram shows us the detail values in which there are 2 possibilities i.e., a. thick blood vessels of diabetic retina, b. normal blood vessels of non-diabetic retina.

2. Standard Data

We need to pre-process the data where SVM will analyse the data but this will not be suitable for SVM so we need to standardize the data because there are lot of components included here and we need all the data to be in same range. So, we standardize the data according to SVM.

3. Train Test Split

Once we standardize the data, we split it into training and testing data so we train our machine model with training data and then we find the accuracy score of our model with the help of test data. Once we split our data in testing and training data it will be sent to SVM. Once SVM learns from the Trained data it can then detect whether person is diabetic or non-diabetic from input data.

4. Support vector machine (SVM)

SVM requires a dataset from which it can learn from we have included dataset of diabetic and non-diabetic persons which includes the following labels, Pregnancies, Glucose, Blood Pressure, Skin Thickness, Insulin, BMI, Diabetes Pedigree Function, Age So In our project, we train our model with medical information above mentioned. User needs to input the information of patients

IV. FUTURE SCOPE

Our system uses a machine learning algorithm to detect diabetes. In data science, there are numerous classification algorithms available, including Naive Bayes, SVM, Decision Tree, ID3, and others. We can add more algorithms to find outputs in the future, and the algorithms can be compared to find the most efficient algorithm. We can include a visitor query module in which visitors can submit questions to the administrator and the administrator can respond. We can include a treatment module in which doctors can upload treatment details for patients to view. The designed system and machine learning classification algorithms could be used to predict or diagnose other diseases in the future. The project could be expanded and improved to include some diabetes.

V. CONCLUSION

Diabetes, which is incurable, affects a significant portion of the human population. If diabetes is not adequately treated, it can be fatal. As a result, diabetes must be detected as soon as possible. Nerve damages caused by diabetes, affect the working of the heart. In our work the image histogram values and the standard input data gives us a accurate score of 78%. Our non-invasive, flexible and

reproducible system can serve as a reliable tool to clinicians to detect diabetes. To improve accuracy even further, a very large input dataset can be used. The anticipated information can serve as a warning sign for both the patient and the doctor, allowing them to take appropriate control and precautionary measures.

ACKNOWLEDGMENT

At the outset we would like to acknowledge our grateful thanks to our guide Ms.R.R.Owhal From the department of computer engineering for his valuable guidance and suggestions regarding our project entitled "Diabetes Detection Using Image Processing Algorithm" We would like to express our thanks to for providing necessary facilities for completion of this work. Last but not least we would like to thank our all staff and friends for their knee advice and support.

REFERENCES

- [1]. Daanouni O, et.al., (2019) Predicting diabetes diseases using mixed data and supervised machine learning algorithms. In: Abstracts of the 4th international conference on smart city applications.
- [2]. Sisodia D, et.al., Prediction of diabetes using classification algorithms. *Procedia ComputSci* .
- [3]. Ahuja R, et.al., (2019) A diabetic disease prediction model based on classification algorithms. *Ann Emerg Technol Comput* 3.-9.
- [4]. Alehegn M et.al., (2019) Diabetes analysis and prediction using random forest, KNN, Naive Bayes, and J48: An Ensemble Approach. *Int J Scitechnol Res* .1354.
- [5]. Naqvi, B., Ali, A., Hashmi, M. A., &Atif, M. (2018). Prediction Techniques For Diagnosis Of Diabetic Disease: A Comparative Study. *International Journal Of Computer Science And Network Security*, 18(8), 118-124.