

Web Application for Diabetes Prediction System

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ABSTRACT

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Diabetes is a metabolic disorder that affects millions of people throughout the world. Every year, the rate of occurrence rises drastically. Diabetes-related problems in several important organs of the body can be lethal if left untreated. Diabetes must be detected early in order to receive proper treatment, which can prevent the condition from escalating to severe problems. In this project, we are working on ML based web application which will detect whether patient is diabetic or not. Here, we are trying to build a website for medical lab which will inform patient whether they are diabetic or not on a website. This will make process paperless and faster. When a lab manager fills information about patient's blood, the website will detect and tell the patient whether he/she is diabetic or not. For this project, we are using logistics regression which is very well-known Machine learning algorithm for the detection of diabetes. For website development, we are using Django which is great python ore. By using this platform, likeminded people can connect and work together to solve the problem.

Keywords: Algorithms, Logistic regression, Numpy, Pandas, Django, Scikitlearn.

I. INTRODUCTION

Diabetes is a chronic disease with the potential to cause a worldwide health care crisis. International Diabetes Federation surveyed that 382 million people are affected with diabetes across the world. This will be doubled as 592 million as in future. Diabetes mellitus or simply diabetes is a disease caused due to the increase level of blood glucose. Many traditional methods, based on different tests, are used for diagnosing diabetes.

However, prediction of diabetes in the early stage is quite demanding task for medical practitioner's

because of complex interdependence on various factors affecting human organs such as kidney, eye, heart, nerves, foot etc. Data science methods have the potential to benefit other scientific fields by shedding new light on common questions. This one task is to help make predictions on provided medical data. Machine learning is a new discipline of data science that studies how machines learn from their past experiences.

The goal of this research is to create a system that combines the results of many machine learning approaches to provide a system that can accurately detect diabetes in a patient early on. SVM, Logistic

regression, and ANN are three supervised machine learning methods that will be used in this research to predict diabetes. The goal of this study is to develop an effective technique for detecting diabetes illness earlier.

II. METHODS AND MATERIAL

An implementation plan, used as a supplement to your strategic plan, lays out how to bring your strategic plan to life by breaking it down into distinct parts, with each step allocated to a team member to accomplish on a predetermined timetable. At the organizational level, strategic planning determines the direction of the company's strategy and allocates resources to make that aim a reality. As a result, the implementation plan sets the boundaries of that, describing how to effectively implement a strategic plan from the outset, as well as how to properly manage it as it is implemented. To further comprehend the system, look at the diagram below.

It's more of a jumble of duties resulting from a needs assessment while analyzing your strategy plan. During the duration of the project, an implementation plan was followed utilizing an iterative technique. A system architecture is a conceptual model that outlines a system's structure, behavior, and additional viewpoints. An architectural description is a formal description and representation of a system that is arranged in a way that allows for reasoning about the system's structures and actions. A system architecture can be made up of system components and created sub-systems that will work together to accomplish the overall system. There have been initiatives to codify languages for describing system architecture, which are referred to collectively as architecture description languages. ADLs are employed in a variety of fields, including system engineering, software engineering, and enterprise modeling and engineering

III. RESULTS AND DISCUSSION

We will speed up the process of diabetes detection by laboratories and provide the result with less involvement with the patient after developing this online application.

Customers will always have a soft copy of their report with them, eliminating the need for them to bring paper reports with them when they see the doctor.

IV. ARCHITECTURE AND DESIGN

A system architecture is the conceptual model that defines the structure, behavior, and more views of a system. At the organizational level, strategic planning determines the direction of the company's strategy and assigns resources to make that aim a reality. As a result, the implementation plan delineates the boundaries of that, laying out how to best implement a strategic plan from the outset, as well as how to properly manage it as it is done, as described in the implementation plan. Look at the diagram below for a better grasp of the system. System engineering, software engineering, and enterprise modelling and engineering are all fields that utilise ADLs.

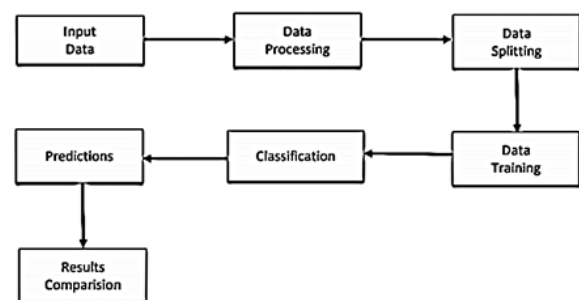


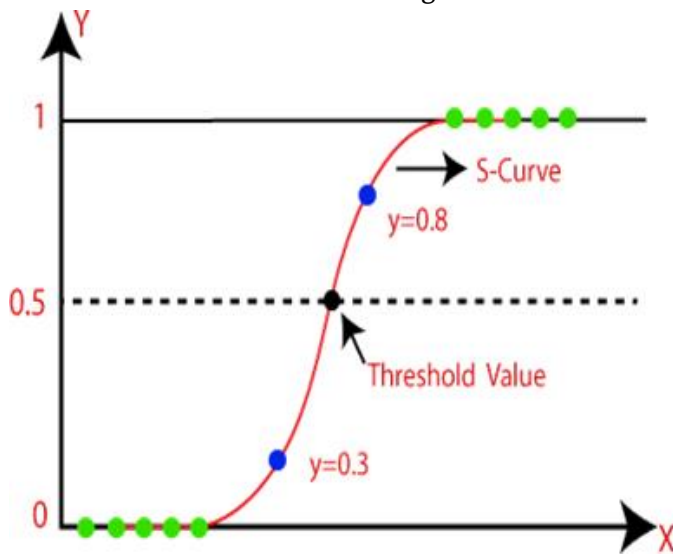
Figure 1: System Architecture

V. IMPLEMENTATION DETAILS

The supervised learning classification algorithm logistic regression is used to predict the likelihood of a target variable. There are only two classifications because the goal or dependent variable is

VI. CONCLUSION

dichotomous in nature. To put it simply, the dependent variable is binary, with data represented as 1 (representing success/yes) or 0 (representing failure/no). $P(Y=1)$ is mathematically predicted by a logistic regression model as a function of X . It's one of the most fundamental machine learning methods, and it may be applied to a wide range of classification problems, including spam detection, diabetes prediction, cancer diagnosis, and so on. A logistic regression is a machine learning classifier. The observations for discrete classes are divided using this set of principles. The logistic regression outputs are entirely dependent on the opportunity feature. It employs the "sigma" property of the fee function. The sigma function is more difficult to understand than a simple linear function. Logistic regression is a technique for predicting the outcome of Limit the value of the cost function to a range of 0 to 1.



To implement the logistic regression using Python, use the below steps:

1. Data pre-processing step.
2. Fitting logistic regression to the training set.
3. Predicting the test result.
4. Test accuracy of the result (Creation of confusion matrix).
5. Visualizing the test set result.

With the use of modern computational methods and the availability of enormous amounts of epidemiological and genetic diabetes risk datasets, machine learning has the potential to transform diabetes risk prediction. Diabetes must be detected early in order to be treated. This paper proposed a machine learning method for predicting diabetes levels. The method may also assist researchers in developing an accurate and useful tool that will reach physicians' tables to assist them in making better decisions about illness state.

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