PCET's

Pimpri Chinchwad College of Engineering,

Nigdi, Pune-44

Department of Electronics & Telecommunication

PBL VI Synopsis

Year 2022 – 2023

Sem-VI

Project Synopsis

1. Project Title: DIAGNOSIS OF DIABETES MELLITUS USING ARTIFICIAL NEURAL NETWORKS

2. Details of Group Member:

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3. Project Overview / Background:

- **Need of Work / Reason for selection of this project:**

  The number of patients that were infected by Diabetes Mellitus (DM) has reached 415 million patients in 2015 and by 2040 this number is expected to increase to approximately 642 million patients**.** Early detection is key in diabetes because early treatment can prevent serious complications. A diagnosis of the dataset is necessary to find these afflicted individuals and treat them appropriately**.**

- **Objective**:

  1. To extract the most useful features for the model-building process from the raw data.
  2. To retrieve the data for building the dataset and splitting the dataset into training sets and testing sets.
  3. To Experiment with different deep learning algorithms available for our processed data.
  4. To Integrate the model with the Web application for performing the prediction.

- **Problem Statement:**

  Diabetes mellitus is a metabolic condition defined by an abnormal rise in blood sugar content caused by insulin insufficiency. According to the World Health Organization,422 million people worldwide suffer from diabetes, with the majority living in low-or middle-income nations. Up to 2030, this figure might be boosted to 490 billion. As a result, data analytics might be used to make an early diabetes prediction. The act of analyzing and detecting hidden patterns from massive amounts of data in order to make conclusions is known as adapt analytics. This analytical procedure is carried out in health care utilizing a machine or deep learning algorithms to analyze medical data and develop machine learning models to perform medical diagnosis.

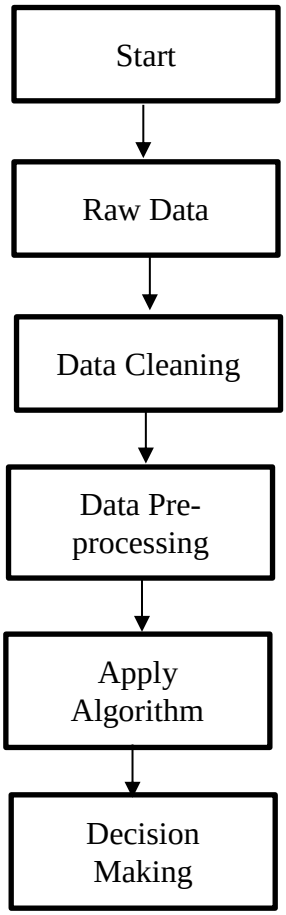
- **Algorithm selected for implementation:**

  1. Support vector machine
  2. Random Forest
  3. K-Nearest Neighbors
  4. Decision Tree

4. Methodology:

- **Flowchart:**

  Select random K data points for the training set. The data is input is processed through a series of procedures at this stage of the proposed system in order to increase the system's performance. To begin, data reduction is done to the input dataset in order to remove any noisy or inconsistent data. Following that, examine the dataset for any null values and filled them with the medians of their respective characteristics.



- **Advantages:**

1. By using this system we can predict diabetes with high accuracy. By using different machine-learning techniques.
2. This project is to propose effective classification models based on supervised machine learning.

- **Limitations:**

1. The research was conducted using only small sample data for the prediction of diabetes.
2. The system is not able to detect the type of diabetes of patient has.
3. If non-linear association and interactions between variables are ignored the accuracy of the models may be compromised.

- **Applications:**

1. Diabetes prediction model is used for better classification of diabetes which includes a few external factors responsible for diabetes along with regular factors like Glucose, BMI, Age, Insulin, etc. Classification accuracy is boosted with a new dataset compared to the existing dataset.
2. Algorithms are used to predict whether the person is diabetic or not.
3. The main application is to predict based on diagnostic measurements whether a patient is diabetic.

5. Project requirements:

- **Facilities required:**

Hardware:

Operating system: Windows

RAM:4GB Required

Software:

Browser: MS Edge, Google Chrome

Language: Python, HTML, CSS, JAVASCRIPT

Visual Studio

6. References:

1. Priyanka Indoria, Yogesh Kumar Rathore, "A Survey: Detection and Prediction of Diabetes Using Machine Learning Techniques" ,Vol. 7 Issue 03, March-2020, International Journal of Engineering Research & Technology (IJERT).
2. L. Beqiri; A. Velinov; B. Fetaji; L. Loku; A. Buçuku; Z. Zdravev,"Analysis of Diabetes Dataset", 2020 43rd International Convention on Information, Communication and Electronic Technology (MIPRO),IEEE.
3. B. SRIDHARA MURTHY; J. SRILATHA, Comparative Analysis on Diabetes Dataset Using Machine Learning Algorithm, 02 August 2021,IEEE
4. B. Nithya and Dr. V. Ilango," Predictive Analytics in Health Care Using Machine Learning Tools and Techniques", International Conference on Intelligent Computing and Control Systems, 978-1-5386-2745-7, 2021

Signature of Guide:

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