DEPARTMENT OF APEX INSTITUTE OF TECHNOLOGY

PROJECT PROPOSAL

1. Project Title: - Classification of Diabetes Health Indicators

This Project seeks to transform diabetes diagnosis and treatment. To create precise prediction models, the research analyses large datasets that include important health markers including age, blood glucose levels, BMI, and family history. By effectively classifying people into categories of diabetics and non-diabetics, these models will make early detection and individualised treatment programmes possible. The project places a strong emphasis on interpretability in an effort to give medical practitioners useful information that will help them make well-informed decisions. In the end, incorporating these models into healthcare systems would improve patient outcomes and diabetic care efficiency by guaranteeing prompt interventions.

2. Project Scope: - (Max 500 words)

a. WHAT WILL BE DONE?

The primary goal of the Classification of Diabetes Health Indicators Project is to develop a robust system for the accurate classification of individuals based on health indicators, facilitating early diagnosis and personalized treatment plans. The project will encompass the following key elements:

→Project elements (Classification of Diabetes Health Indicators))

- Feature Selection: Identifying and leveraging relevant health indicators, such as blood glucose levels, BMI, age, and family history, to build predictive models for diabetes classification.
- Model Development: Utilizing machine learning algorithms to create models that efficiently classify individuals as diabetic or non-diabetic based on the selected health indicators.
- Interpretability and Explainability: Ensuring transparency in model predictions to provide healthcare professionals with valuable insights into the relationships between health indicators and diabetes risk.

→Areas this project will be targeting:

- Early Diagnosis: Facilitating timely identification of individuals at risk of diabetes for proactive intervention.
- Personalized Treatment: Enabling healthcare professionals to tailor treatment plans based on individual health indicators and risk factors.
- Disease Management: Enhancing the overall management of diabetes through accurate and efficient classification.

→Advantages of this project:

- Timely Intervention: Early detection contributes to proactive healthcare measures, improving patient outcomes.
- Personalized Healthcare: Tailoring treatment plans based on individual health indicators enhances the effectiveness of diabetes management.
- Informed Decision-Making: Healthcare professionals can make informed decisions with transparent insights from the classification models.

→Concepts to be used in this project:

- Python
- Healthcare Analytics

- Machine Learning
- Interpretability and Explainability

→WHAT WON'T BE DONE?

- Extensive Health Indicator Expansion: The project will not extend its scope beyond the classification of diabetes based on predetermined health indicators. It will not explore additional health parameters or conditions unrelated to diabetes.
- Multilingual Health Indicator Recognition: Initially, the system will focus on recognizing health indicators and patterns prevalent in English-language medical records, and may not include support for multilingual healthcare data.

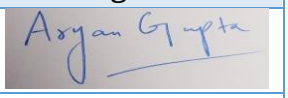
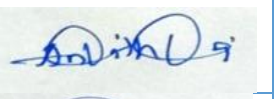
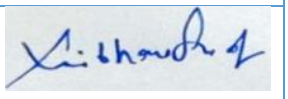
b. WHAT THE RESULT WILL LOOK LIKE?

- The project's ultimate product will be an advanced software system that can correctly categorise people according to diabetes health indicators. Users can enter pertinent medical information, and the system will clearly classify the user by showing whether or not they have diabetes.
- Research Paper will be published.

3. Requirements: -

- Hardware Requirements
  1. Computer with Sufficient Processing Power
  2. Graphics Processing Unit (GPU)
- Software Requirements
  1. Data Processing Libraries (Pandas, NumPy)
  2. Model Interpretability Tools
  3. Python (Pycharm, Jupyter)

STUDENTS DETAILS

Name	UID	Signature
Aryan Gupta	20BCS6656	
Ankith Raj	20BCS6684	
Aryan Khushwaha	20BCS6691	
Vaibhav Kumar Singh	20BCS3842	

APPROVAL AND AUTHORITY TO PROCEED

We approve the project as described above, and authorize the team to proceed.

Name	Title	Signature (With Date)
Dr Amit Vajpayee	Supervisor	