

# **AI Based Diabetes Prediction System**

**Phase 1: Problem Definition and Design  
Thinking**

**JANANI P  
AU711021104016**

# **AI Based Diabetes Prediction System**

## **Phase 1: Problem Definition and Design Thinking**

### **Problem Definition:**

- Building an AI-powered diabetes prediction system that uses machine learning algorithms to analyse medical data and forecast a person's likelihood of developing diabetes is the problem's short description.
- In order to effectively manage diabetes and avoid complications, early detection and prevention are crucial. Diabetes is a serious chronic disease that affects millions of people worldwide.
- The system's goal is to offer early risk assessment and personalised preventive measures, empowering people to take charge of their health.
- In other words, the objective is to create a system that can use medical information to recognise people who are at a high risk of contracting diabetes before they do.
- This would enable individuals to take action to stop or postpone the onset of diabetes, such as changing their way of life or taking medication.

### **Design Thinking:**

- design thinking methodology for developing an AI-powered diabetes prediction system is impressive. It covers each of the essential steps, such as:

#### **Data gathering:**

- It's critical to gather a sizable and varied dataset of medical information from people with and without diabetes.
- Age, sex, body mass index, blood pressure, blood glucose levels, and family history of diabetes should all be included in

the dataset as well as other characteristics that are known to be linked to a higher risk of developing diabetes.

### **Data preprocessing:**

- In order to train machine learning models, the medical data needs to be cleaned, normalised, and prepared. This could entail scaling the data, removing outliers, and adding missing values.

### **Feature selection:**

- The selection of pertinent features that can affect diabetes risk prediction is crucial. Statistical techniques or expert medical advice can be consulted in order to accomplish this.

### **Model selection:**

- A number of machine learning algorithms can be used to predict diabetes. Support vector machines, decision trees, random forests, and logistic regression are a few common options.
- To find an algorithm that performs well on the provided dataset, it is important to experiment with a variety of algorithms.

### **Evaluation:**

- It's crucial to assess the performance of the model using a range of metrics, including accuracy, precision, recall, F1-score, and ROC-AUC
- . This will make it easier to see where the model might benefit from being improved.

### **Iterative improvement:**

- After the model has been tested, it can be improved iteratively by adjusting the parameters or looking into methods like feature engineering.