**Diabetes Prediction Project**

**Introduction** The Diabetes Prediction project aims to develop a machine learning model that can predict the likelihood of a person having diabetes based on various health metrics. Early detection of diabetes is crucial for effective management and treatment, making this project valuable for healthcare applications.

**Data Collection and Processing** The dataset used in this project consists of medical attributes such as glucose levels, blood pressure, BMI, insulin levels, and skin thickness. The data was loaded using pandas, cleaned to handle missing values, and preprocessed to ensure consistency. Exploratory Data Analysis (EDA) was conducted to understand the distribution of variables and their correlations with diabetes outcomes.

**Model Development** A classification model was developed using machine learning techniques such as Logistic Regression and Random Forest. The dataset was split into training and testing sets, and the model was trained to classify individuals as diabetic or non-diabetic based on input features. Model performance was evaluated using metrics such as accuracy, precision, recall, and F1-score.

**Results and Conclusion** The trained model demonstrated good predictive accuracy, effectively identifying individuals at risk of diabetes. This project highlights the importance of data-driven approaches in medical diagnosis and early intervention. Future improvements could include incorporating additional clinical features and testing deep learning models to enhance predictive performance.

This project serves as a foundation for further research in medical AI applications and can be extended for real-time diabetes risk assessment.