Glucotwin - AI-driven Insulin Dosage Prediction System

1. Introduction

Glucotwin is an AI-based system designed to improve pediatric diabetes management. It uses real-time glucose monitoring, predictive analytics, and personalized insulin dosage recommendations to enhance patient safety.

2. Problem Statement

Traditional insulin dosage methods rely on manual calculations and static formulas, which are error-prone and inefficient. There is a need for a system that can provide real-time, personalized recommendations.

3. Aim

To develop an AI-driven system that provides real-time monitoring and personalized insulin dosage recommendations for pediatric diabetes patients.

4. Objectives

Develop mobile application, implement machine learning model, provide predictive alerts, ensure data security, and support clinicians and guardians.

5. Proposed Solution

The system uses a digital twin model to simulate patient metabolism and generate safe insulin dosage recommendations based on real-time data.

6. Scope

Includes monitoring, prediction, alerts, dashboards, and secure data management. Limited to decision support.

7. Methodology

Requirement analysis, design, development, integration, testing, and deployment.

8. Tools & Technologies

Flutter/React Native, Firebase, Python, TensorFlow/PyTorch, REST APIs.

9. Expected Outcomes

Accurate predictions, improved safety, real-time alerts, and better diabetes management.

10. Conclusion

Glucotwin provides a smart and reliable solution for managing pediatric diabetes using AI and cloud technologies.