

Executive Summary

Predictive Diabetes Risk System

Author : Mohamed Makki
Program : MIT Emerging Talent Data and Computer Science
Date : December 2025

Executive Summary

A web-based tool that predicts diabetes risk using basic health data and explains each prediction in plain language. Designed to support clinical screening and patient education in resource-limited settings.

The Problem

Diabetes affects 1 in 10 adults globally, with many undiagnosed until complications develop. Early detection reduces healthcare costs and improves outcomes, but screening tools are often inaccessible or difficult to interpret.

Project Solution

A compact, interpretable screening tool that pairs reliable risk prediction with clear explanations; helping clinicians and communities spot high-risk individuals earlier and act with confidence; a fully functional application that:

- Predicts diabetes risk from 8 basic health metrics
- Provides clear, visual explanations for each prediction
- Requires no medical training to operate
- Runs instantly in any web browser

Limitations & responsible use

- Trained on one public dataset; further validation on local or clinical data is required before clinical deployment.
- Not a replacement for diagnosis — intended as a screening/decision-support aid.
- Ongoing calibration and fairness checks are recommended when applying to new populations.

Current Status

- Fully developed prototype
- Validated predictive accuracy
- Live web application available
- Documentation complete

Live Application

Access: [Streamlit App](#)

Features: Real-time predictions, visual explanations, mobile-friendly design

Next steps / Recommendations

1. Validate with local clinical datasets and re-calibrate risk thresholds.
2. Integrate additional features (EHR fields) and multi-language UI.
3. Deploy a cloud API for mobile/clinic integration and pilot with a healthcare partner.
4. Add monitoring for model drift and fairness audits.