HealthPredict: AI for Early Diabetes Screening

Using Machine Learning to achieve SDG 3.4 (Non-Communicable Diseases)

THE PROBLEM: The Silent Diabetes Epidemic

- **SDG 3.4 Focus:** Reduce premature mortality from non-communicable diseases (NCDs).
- **The Challenge:** Over 400 million people globally have diabetes. Late diagnosis leads to severe complications (blindness, amputation, renal failure) and exorbitant healthcare costs.
- **The Gap:** Lack of accessible, rapid, and scalable screening tools in low-resource communities.

HEALTHPREDICT: Intelligent Risk Assessment

- **What We Do:** We deploy a **Supervised Classification** model (Logistic Regression) to calculate an individual's personalized diabetes risk.
- **How It Works:** The model analyzes 8 risk factors (Glucose, BMI, Blood Pressure, Age, etc.) and provides a binary risk output (HIGH/LOW) in seconds.
- **AI Advantage:** Speed, perfect scalability, and extremely low operational cost compared to traditional laboratory screening.

ROBUST PERFORMANCE (Unseen Data)

- **Key Metric (Example):** Accuracy of 0.7825 on the test set.
- **Clinical Importance:** We prioritize **Precision** (0.7011) to minimize False Positives, ensuring scarce medical resources are directed toward individuals truly at risk.
- **Visualization:** [Image of the Confusion Matrix] **–** Confirms the model's capacity to correctly classify both healthy and at-risk individuals, validating its generalizability.

SCALABILITY WITH EQUITY

- **SDG 3 Impact:** Enables high-volume screening, transforming diabetes prevention at the community level.
- **Ethical Challenge (Bias):** The current model has data bias (limited demographics). Long-term sustainability requires **continuous monitoring** and **retraining with ethnically diverse data** to guarantee **equity** and prevent algorithmic discrimination.
- **CALL TO ACTION: We seek partners to expand data collection and validate *HealthPredict* in real-world, diverse clinical environments.**