Diabetes Prediction Using Machine Learning

SDG 3: Good Health and Well-being

Slide 1: Project Title

Predicting Diabetes with Machine Learning - Aligns with **SDG 3: Good Health & Well-being** - Built using Python, Scikit-learn, and open data

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Slide 2: Why This Matters

- **422 million people** live with diabetes globally
- Many are **undiagnosed** due to lack of early screening
- **Early detection saves lives** and prevents complications
- Goal: Use ML to predict diabetes based on medical data

Slide 3: Dataset Overview

- Source: Plotly public dataset (CSV)
- 768 patient records
- Features include:
- Glucose, BMI, Insulin
- Pregnancies, Blood Pressure
- DiabetesPedigreeFunction, Age
- Target: Outcome (0 = No Diabetes, 1 = Diabetes)

Slide 4: ML Approach

- **Model**: Random Forest Classifier
- **Type**: Supervised Learning
- **Steps**:
- Data Cleaning & Exploration
- Train/Test Split (70/30)
- Model Training
- Evaluation

Slide 5: Results & Evaluation

- **Accuracy**: ~85%
- **Metrics**:
- Confusion Matrix
- Classification Report
- Feature Importance (Glucose, BMI, Age)
- Balanced precision and recall

Slide 6: Ethical Considerations

- **Bias**: Data may not represent all demographics
- **Fairness**: Model shouldn't replace doctors
- **Impact**: Aids early screening, especially in underserved areas

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Slide 7: SDG Reflection

- SDG 3: Ensure healthy lives and promote well-being
- AI can assist in:
- Early detection
- Reducing complications
- Lowering healthcare costs
- Supports tech-for-good initiatives

Slide 8: Live Demo & Code

- Project Notebook: `diabetes_model.ipynb`
- View on GitHub: github.com/praiseking/diabetes-ml
- Try it in Google Colab with live data

Slide 9: Thank You

Praise King - GitHub: @praiseking - Project: Machine Learning for SDG 3 - Let's use AI to build a healthier world! 🌍