SUO

Diabetes Prediction: Identifying Key Factors

A comprehensive analysis of the Pima Indians Diabetes Database. This project explores machine learning approaches to predict diabetes risk.

N by N SHAHEEN Sultana



Project Overview

Data Source

Pima Indians Diabetes Database from medical research studies.

Objective

Develop predictive models to identify diabetes risk factors.

Approach

Machine learning analysis using Python and Jupyter notebooks.

Key Risk Factors



Blood Pressure

Elevated blood pressure levels increase diabetes risk significantly.



BMI

Body mass index serves as crucial predictor.



Genetics

Family history and genetic predisposition matter.



Age

Risk increases with advancing age patterns.









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Data Analysis Process

1

Data Collection

Gather Pima Indians medical records and health metrics.

2

Data Preprocessing

Clean and prepare dataset for machine learning analysis.

3

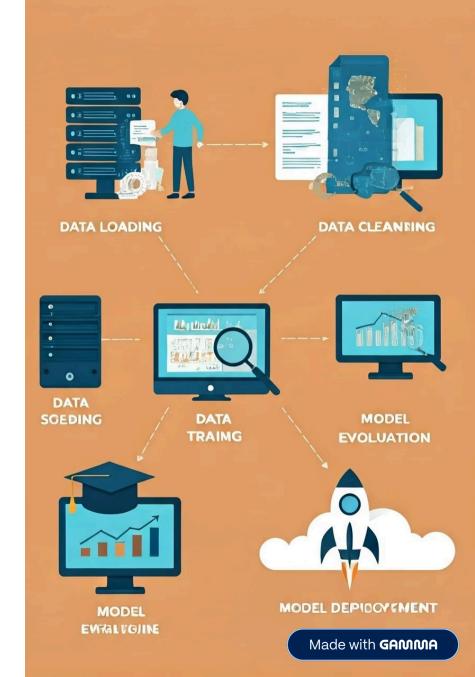
Model Training

Apply various algorithms to identify prediction patterns.

4

Validation

Test model accuracy and refine prediction capabilities.



Model Performance

85%

768

Accuracy Rate

Data Points

Model prediction accuracy achieved

Total patient records analyzed

8

Features

Key variables examined



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Technical Implementation

Python Libraries

Pandas, NumPy, and Scikit-learn for data processing and modeling.

Jupyter Notebook

Interactive development environment for analysis and visualization.

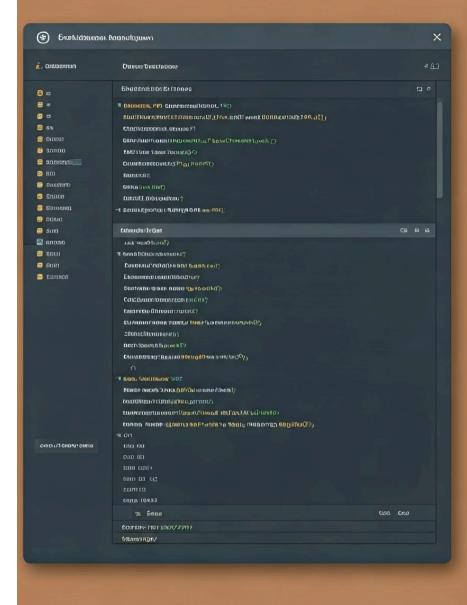
Machine Learning

Classification algorithms to predict diabetes outcomes effectively.

Repository Contents

Jupyter Notebook Complete analysis code and documentation included. PDF Report Comprehensive findings and methodology summary. 3 **PowerPoint** Presentation slides for project overview. **MIT License**

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Next Steps

Model Enhancement

Improve prediction accuracy through feature engineering. Explore advanced algorithms and ensemble methods.

Clinical Application

Validate findings with healthcare professionals. Develop practical screening tools for medical use.