

Analyzing Disease Symptoms and Patient Profiles Using DSM

Business Understanding:

Problem Statement: Improve the accuracy of disease diagnosis through the analysis of patient profiles and symptom data.

Project Objective: Develop a predictive model to identify disease likelihood based on health indicators.

Analytic Approach:

Type of Analysis: Predictive analytics using statistical and machine learning techniques.

Outcome: A model predicting disease presence based on patient data.

Data Requirements:

Required Data: Patient demographics, symptoms, blood pressure, cholesterol levels, and disease outcomes.

Data Source: The provided dataset, which includes these features.

Data Collection:

Data Gathering: The dataset has already been collected and comprises various health indicators and disease labels.

Data Verification: Ensure data quality and relevance to the project goals.

Data Understanding:

Preliminary Analysis: Explore the dataset to understand distributions, missing values, and potential correlations.

Data Exploration Tools: Use statistical summaries and visualizations to gain insights.

Data Preparation:

Data Cleaning: Handle missing or inconsistent data entries.

Data Transformation: Encode categorical variables and normalize/standardize numerical variables as needed.

Modeling:

Model Selection: Choose appropriate models (e.g., logistic regression, decision trees, neural networks).

Model Building: Train models using the prepared dataset.

Model Validation: Split the data into training and testing sets to validate model performance.

Evaluation:

Success Criteria: High accuracy, precision, and recall in disease prediction.

Performance Measures: Use metrics like confusion matrix, ROC curve, and AUC for evaluation.

Deployment:

Deployment Plan: Integrate the model into a healthcare decision-support tool.

Monitoring and Maintenance: Regularly update the model with new data and monitor performance.

Feedback:

Feedback Loop: Collect feedback from healthcare professionals on model effectiveness and usability.

Iterative Improvement: Use feedback to make iterative improvements to the model and deployment strategy.