Chronic Kidney Disease Prediction Project

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Project Overview

This project is a machine learning-based web application for predicting the presence of Chronic Kidney Disease (CKD).

It uses a Random Forest classifier trained on clinical parameters from patient data to predict CKD status. The app takes

input from users through a web form and returns predictions like 'ckd' or 'notckd'. Visualizations are included to enhance the interface.

Model Building Steps

1. Data Cleaning: Missing values were handled using imputation techniques.

2. Label Encoding: Categorical variables were label encoded.

3. Feature Scaling: Not applied as Random Forest is tree-based.

4. Model Training: Random Forest Classifier trained on historical patient data.

5. Evaluation: The model was evaluated using accuracy, precision, recall, and F1-score.

6. Deployment: The model was deployed using Flask, and the UI built with HTML and Bootstrap.

Example Input/Output

Input Example:

- Age: 45, BP: 80, Specific Gravity: 1.020, Albumin: 1, Sugar: 0, etc.

Predicted Output:

- Result: Notckd

Evaluation Metrics

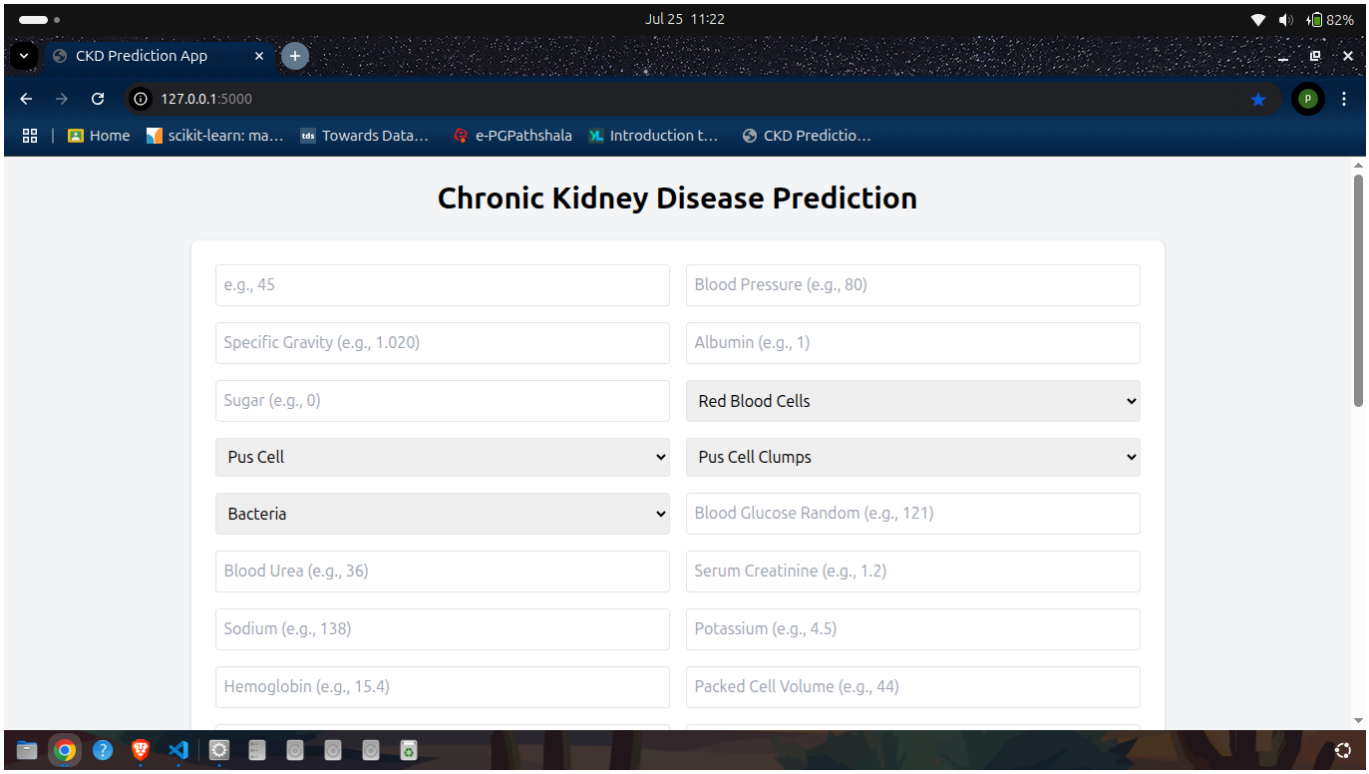
Accuracy: 98.5%

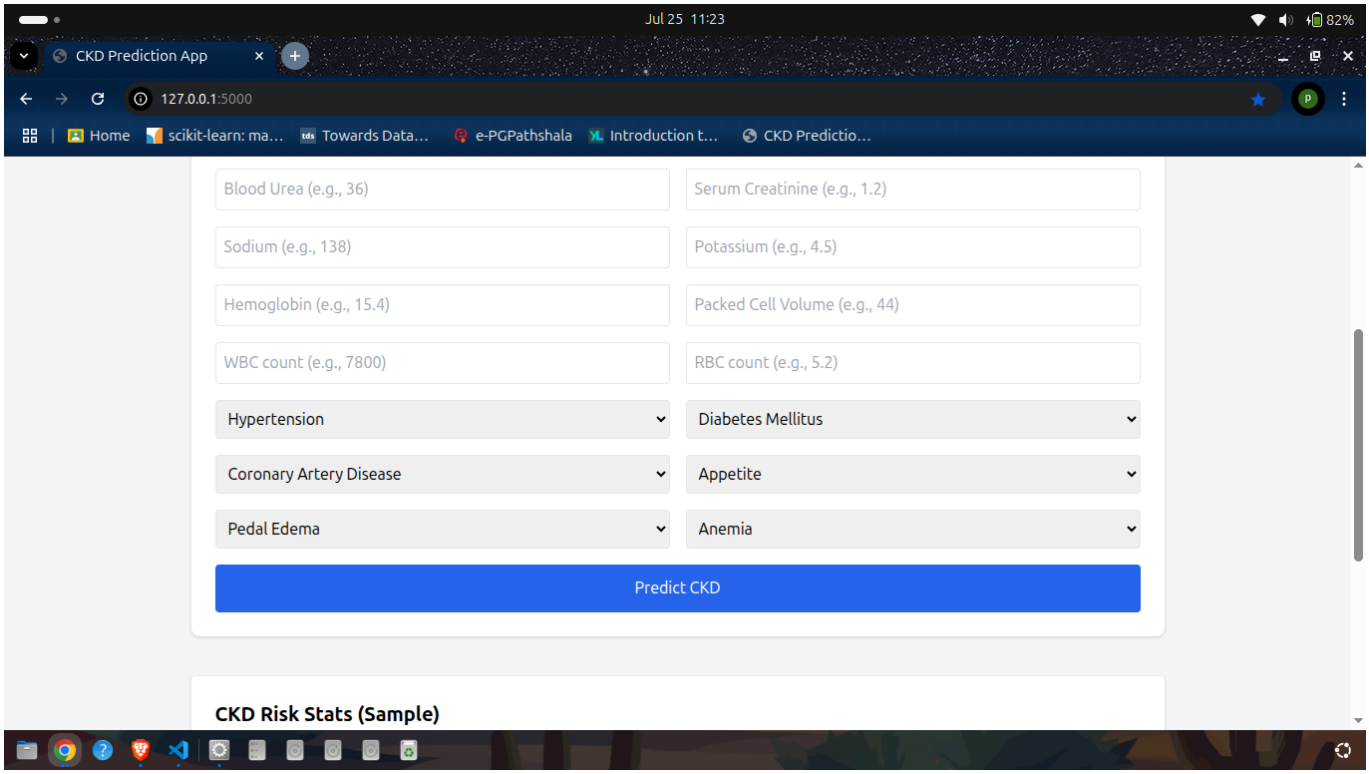
Precision: 97.8%

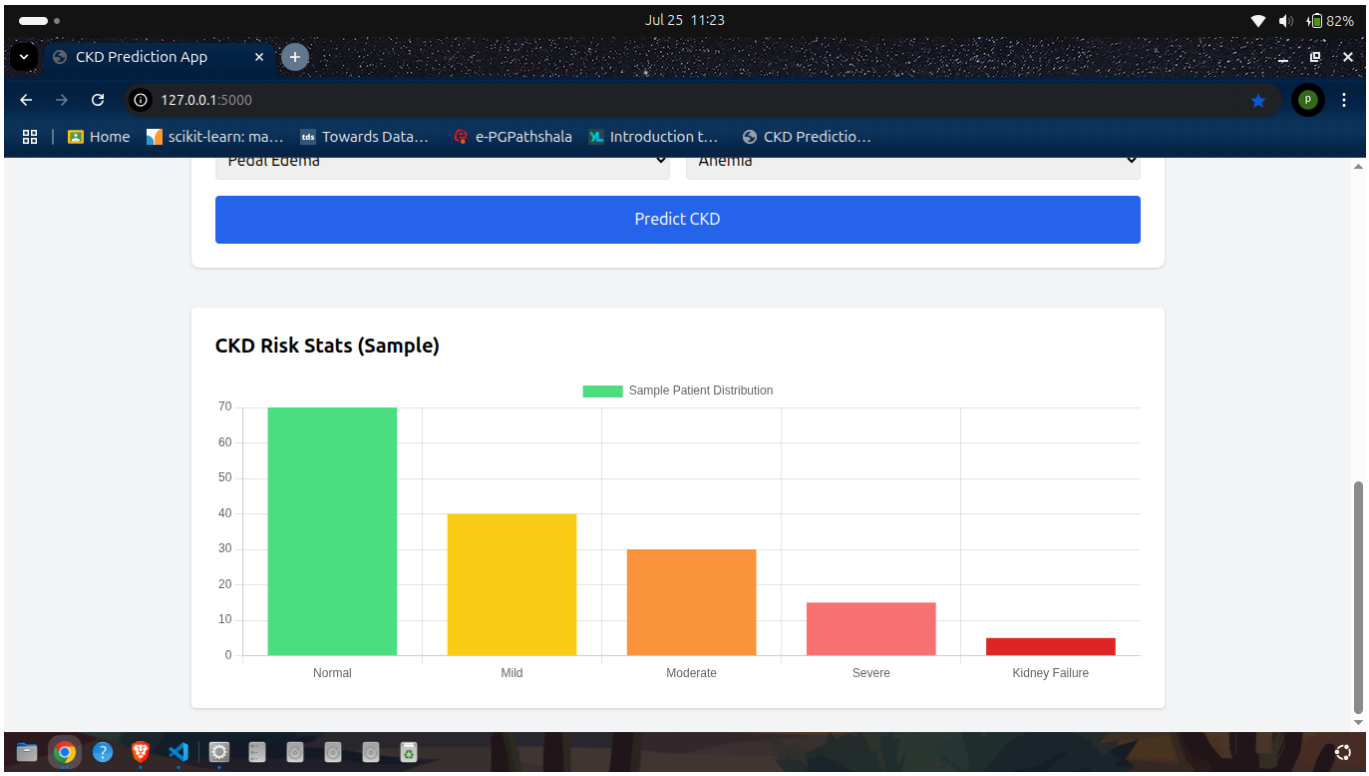
Recall: 98.0%

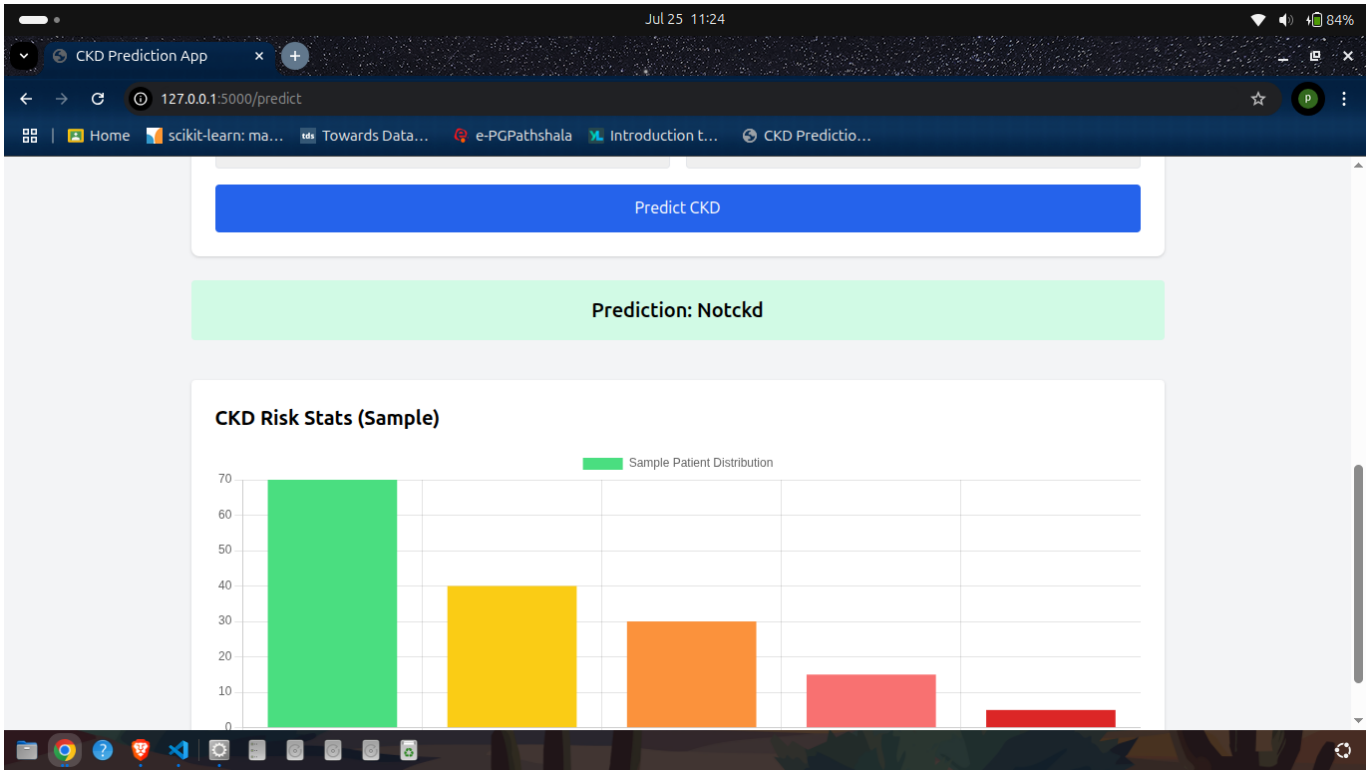
F1-Score: 97.9%

Application Screenshots




Jul 25 11:23
82%
CKD Prediction App
127.0.0.1:5000
Home
scikit-learn: ma...
Towards Data...
e-PGPathshala
Introduction t...
CKD Predictio...
Blood Urea (e.g., 36)
Serum Creatinine (e.g., 1.2)
Sodium (e.g., 138)
Potassium (e.g., 4.5)
Hemoglobin (e.g., 15.4)
Packed Cell Volume (e.g., 44)
WBC count (e.g., 7800)
RBC count (e.g., 5.2)
Hypertension
Diabetes Mellitus
Coronary Artery Disease
Appetite
Pedal Edema
Anemia
Predict CKD
CKD Risk Stats (Sample)


Jul 25 11:23
82%
CKD Prediction App
127.0.0.1:5000
Home
scikit-learn: ma...
Towards Data...
e-PGPathshala
Introduction t...
CKD Predictio...
Predict CKD
CKD Risk Stats (Sample)
Sample Patient Distribution
70
60
50
40
30
20
10
0
Normal
Mild
Moderate
Severe
Kidney Failure


Jul 25 11:24
84%
CKD Prediction App
127.0.0.1:5000/predict
Home
scikit-learn: ma...
Towards Data...
e-PGPathshala
Introduction t...
CKD Predictio...
Predict CKD
Prediction: Notckd
CKD Risk Stats (Sample)
Sample Patient Distribution
70
60
50
40
30
20
10
0