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import pandas as pd
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from sklearn.model_selection import train_test_split
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from sklearn.ensemble import RandomForestClassifier
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from sklearn.metrics import accuracy_score, classification_report
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import matplotlib.pyplot as plt
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# Load sample dataset (e.g., diabetes dataset from UCI)

# Replace this with your patient dataset

df = pd.read_csv("https://raw.githubusercontent.com/jbrownlee/Datasets/master/pima-indians-
diabetes.data.csv")

df.columns = ['Pregnancies', 'Glucose', 'BloodPressure', 'SkinThickness', 'Insulin',

              'BMI', 'DiabetesPedigreeFunction', 'Age', 'Outcome']


# Features and target

X = df.drop('Outcome', axis=1)

y = df['Outcome']


# Split dataset

X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=42)


# Train model

model = RandomForestClassifier()

model.fit(X_train, y_train)


# Predict and evaluate

y_pred = model.predict(X_test)

print("Accuracy:", accuracy_score(y_test, y_pred))

print(classification_report(y_test, y_pred))

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# Feature importance visualization
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importances = model.feature_importances_
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plt.barh(df.columns[:-1], importances)
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plt.xlabel("Feature Importance")
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plt.title("Disease Prediction Feature Importance")
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plt.show()
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