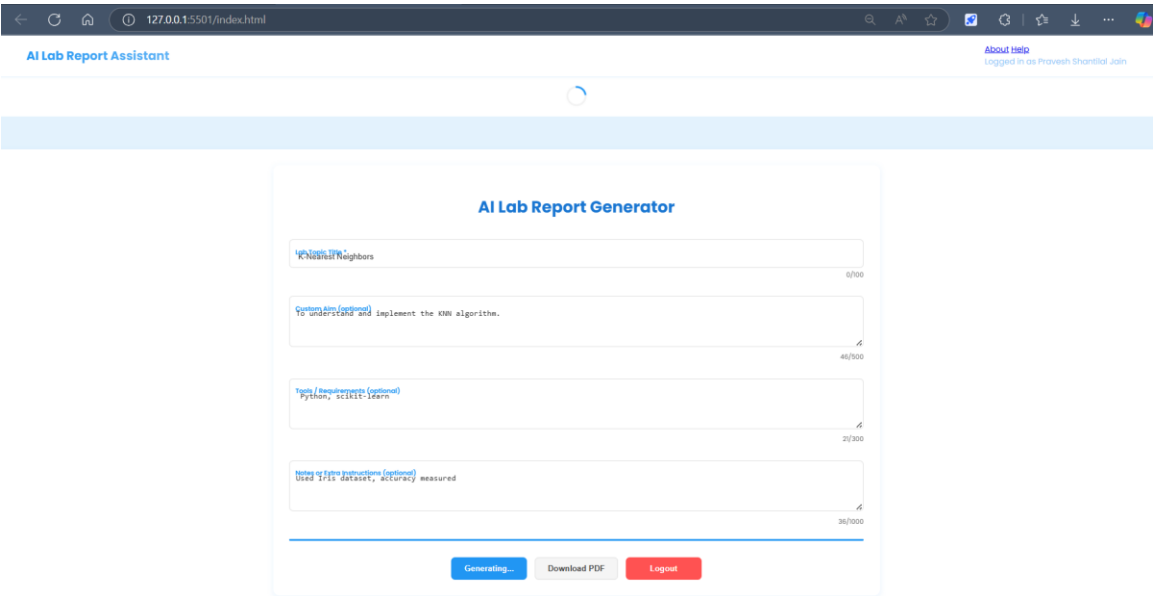
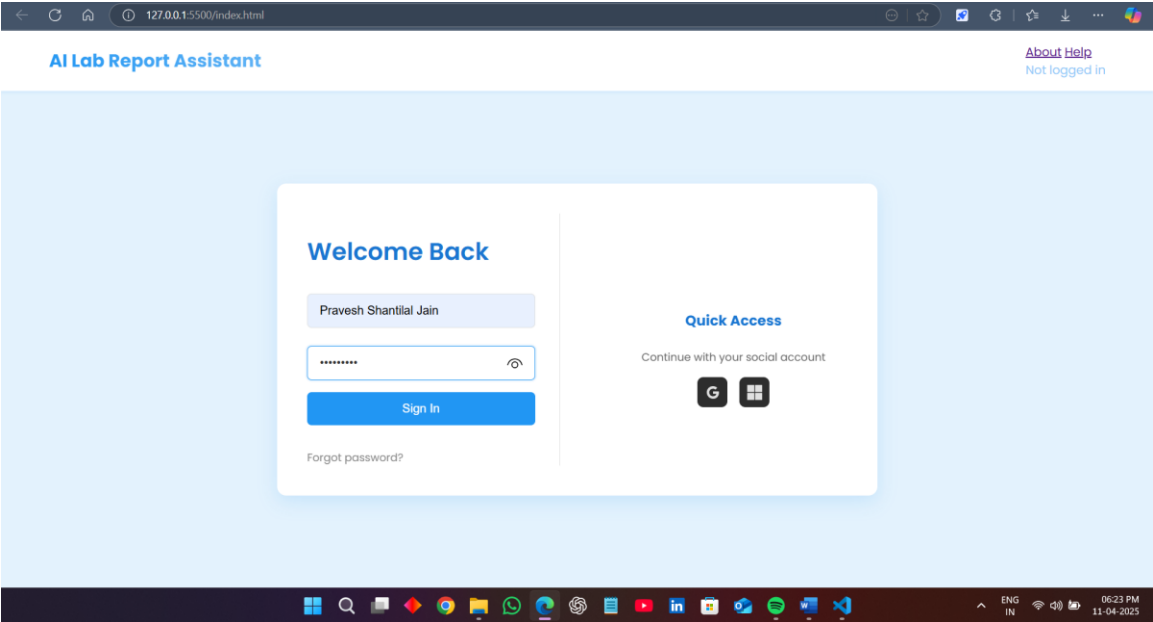


Project Title

AI Lab Report Assistant Using LLMs via OpenRouter API

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Title: A Comprehensive Study on K-Nearest Neighbors (KNN) Algorithm Using Python and scikit-learn: An Analysis of the Iris Dataset

1. Aim
The objective of this lab was to understand the K-Nearest Neighbors (KNN) algorithm, implement it from scratch, and evaluate its performance using the popular Iris dataset in Python using the scikit-learn library. The accuracy of the KNN model was the primary metric of interest.

2. Tools
- Programming Language: Python
- Libraries: scikit-learn (version 0.24.1)
- Dataset: Iris dataset (available in scikit-learn)

3. Code

```
python
from sklearn import datasets
from sklearn.metrics import classification_error_rate
import math

# Load Iris dataset
iris = datasets.load_iris()
X = iris.data
y = iris.target

# Function to calculate Euclidean distance between two points
def euclidean_distance(a, b):
    return math.sqrt(sum((a - b) ** 2))

# KNN function
def knn(X, y, new_data, k=3):
    dist = []
    predictions = []
    for new_point in new_data:
        # Calculate the distance between the new data point and each data point in X
        for i in range(len(X)):
```

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