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Heritage Identification of Monuments using Deep Learning

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Introduction

- Monument is cultural pride and legacy preservation.
- There is a need to digitally recognize and archive the monuments.
- There are 1,157 World Heritage Sites, across 167 nations.
- Heritage sites were selected on the basis of six cultural and four natural criteria.
- Deep learning application for monument recognition.
- CNN for Complex pattern and visual recogniton.

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Motivation

- Preservation of Cultural Heritage.
- Documentation and Record Keeping.
- Efficiency in Presevation Efforts.
- Conservation Planning.
- Tourism and Education.

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Problem Statement

Group ID : 34

Develop a web application To identify the monuments from Images using Deep Learning and Integration of Interpretability for the predicted outcomes.

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Literature Survey

Monument Recognition using Deep Neural Networks By Nithish Srivasthav, Kajal Dhumal:

- This project uses SVM and works efficiently for high definition images.
- When give large dataset this model lags, it has 70 percent accuracy.

Cathedral and Indian Mughal Monument Recognition using Tensorflow by Vikash Yadav and Dinesh Kumar:

- Successfully enable the algorithm to learn potential changes between monuments of the same class.
- They reach 80 percent accuracy.

System Architeture

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- Preparing and Preprocessing the dataset for efficient training of the model.
- Defining a training model or Neural Network using the concept of CNN.
- Choosing appropriate parameters for the model, via trail/error method for better chances of accuracy of prediction.
- Training the model for specified amount of epochs. Testing it for the output, and finally showing its accuracy.

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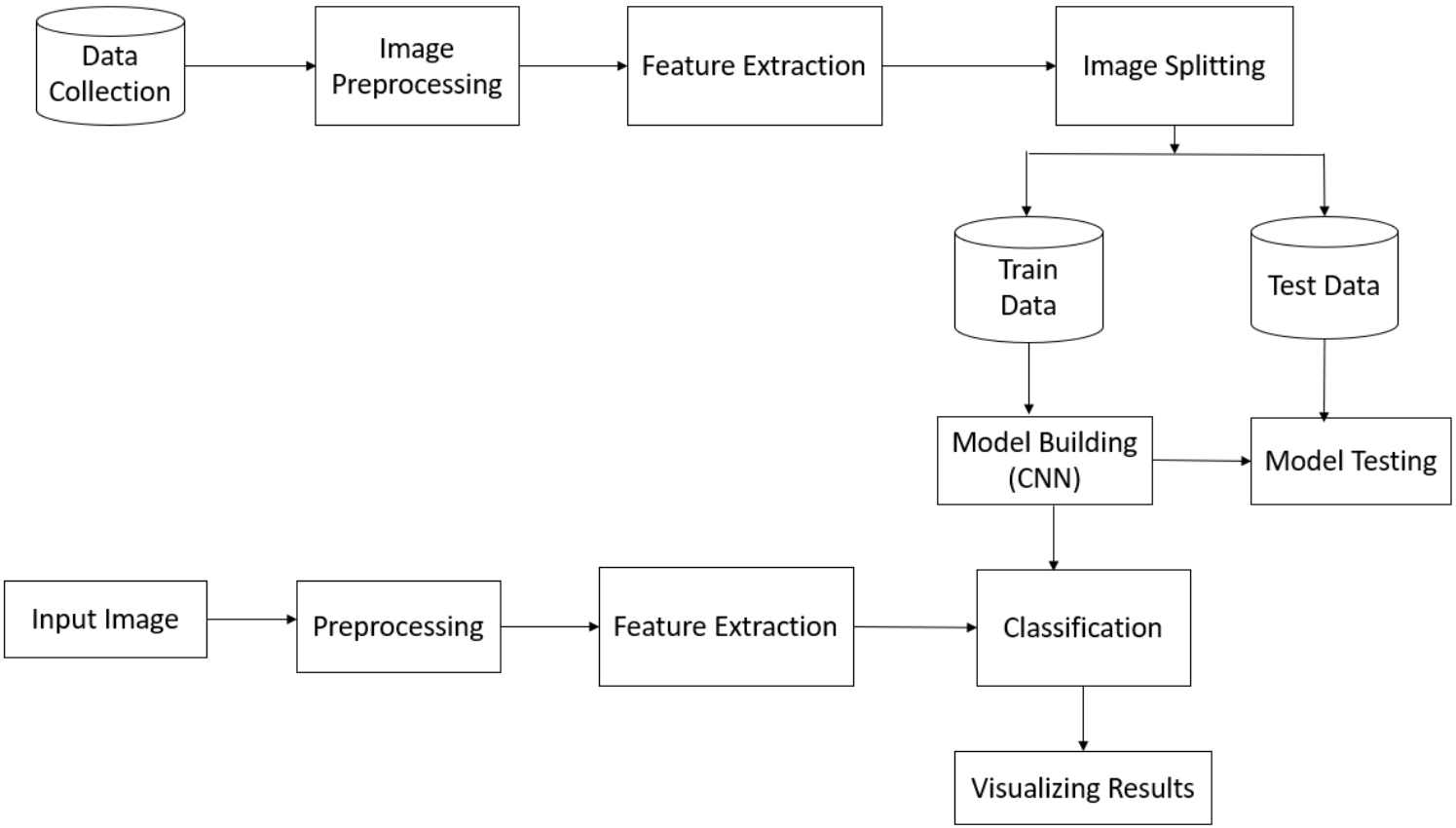

Figure: System Architecture

Use Case Diagram

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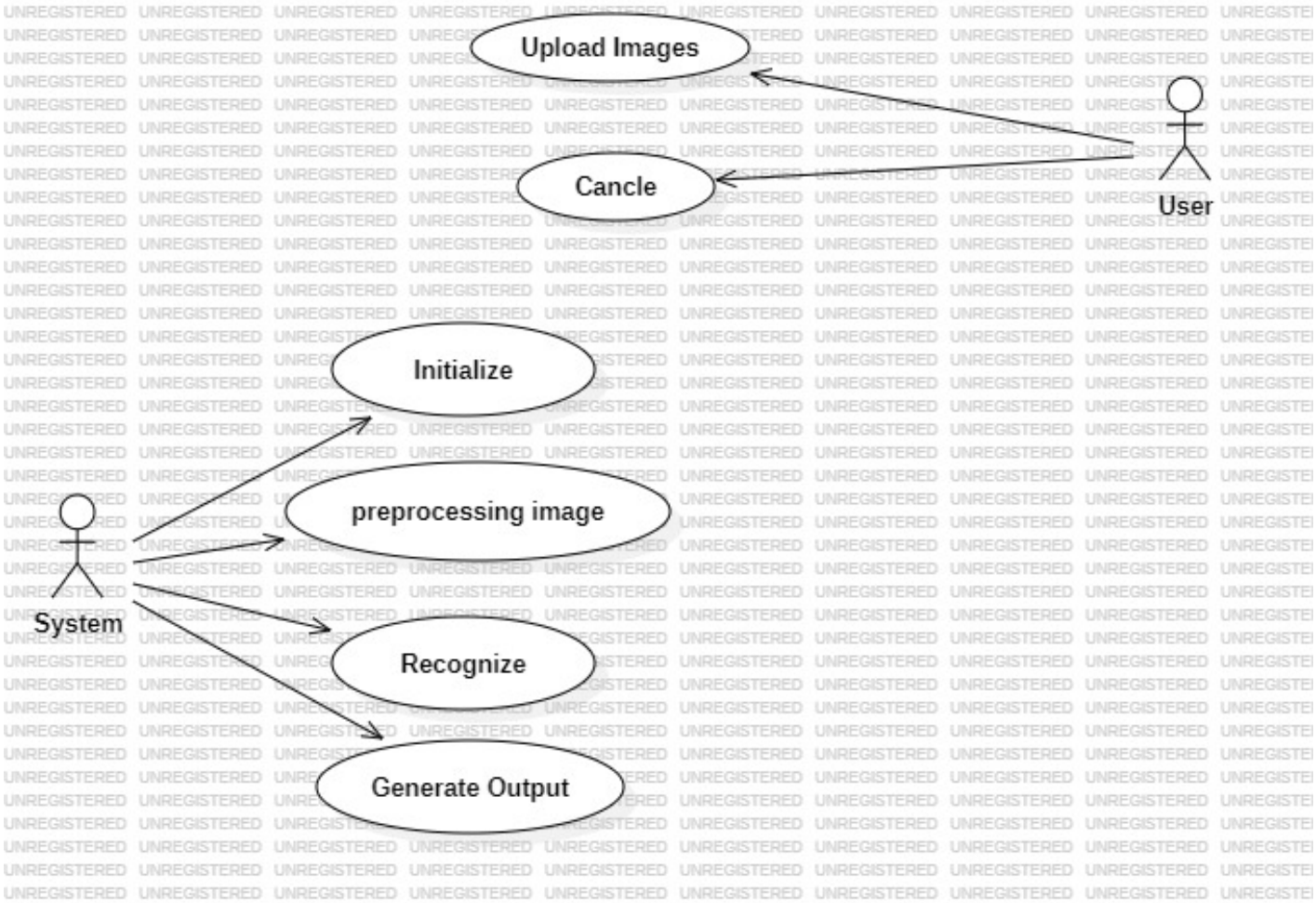

Figure: Use Case Diagram

Sequence Diagram

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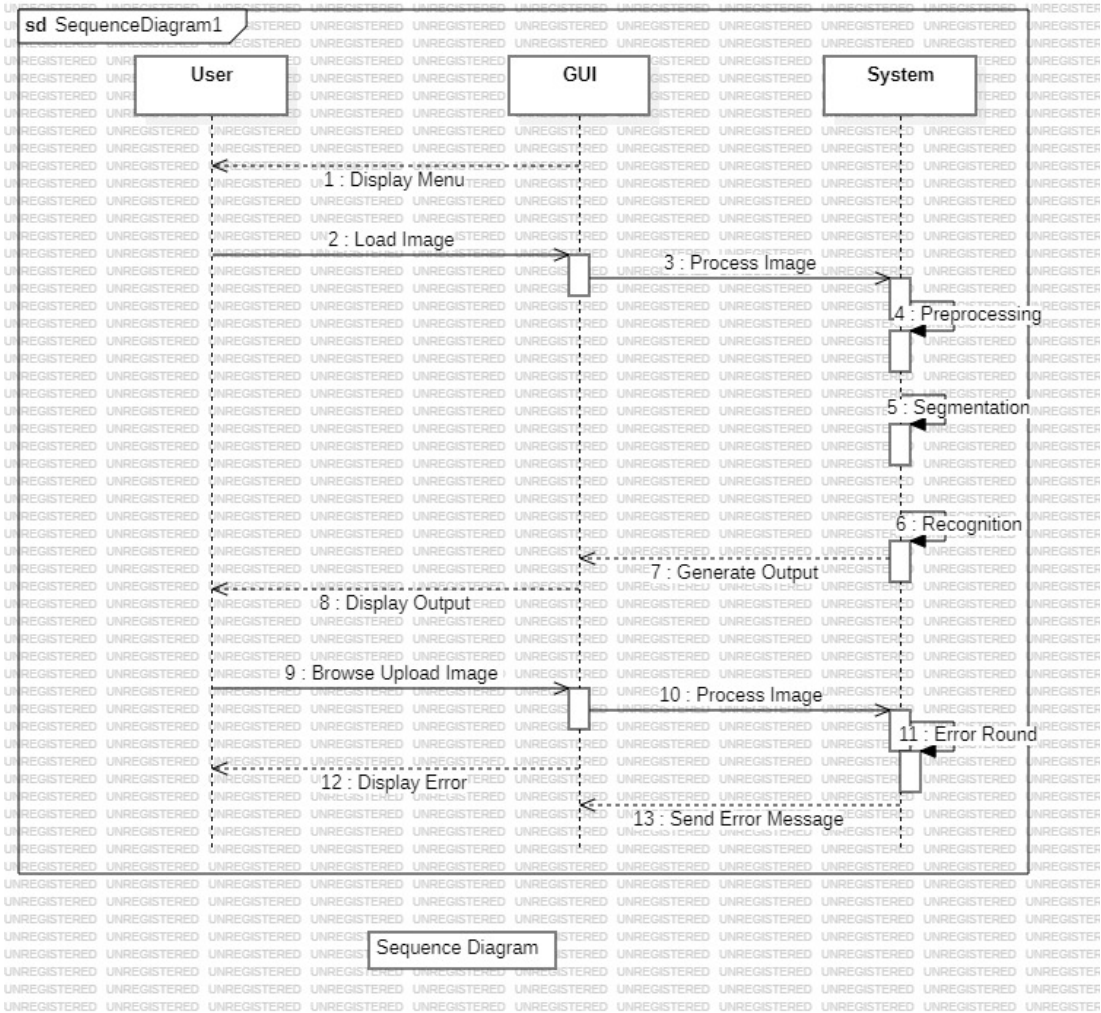

Figure: Sequence Diagram

Class Diagram

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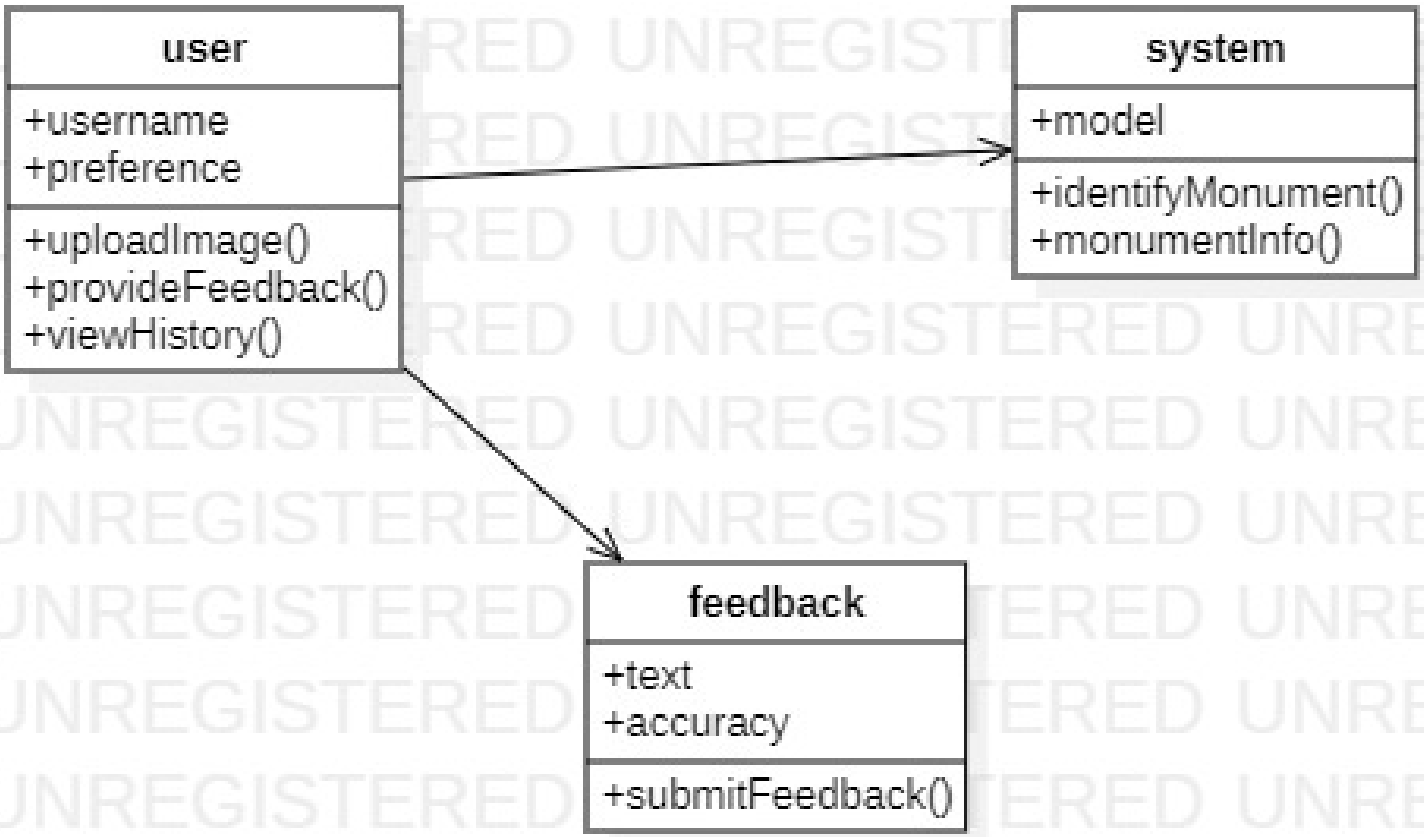

Figure: Class Diagram

Deployment Diagram

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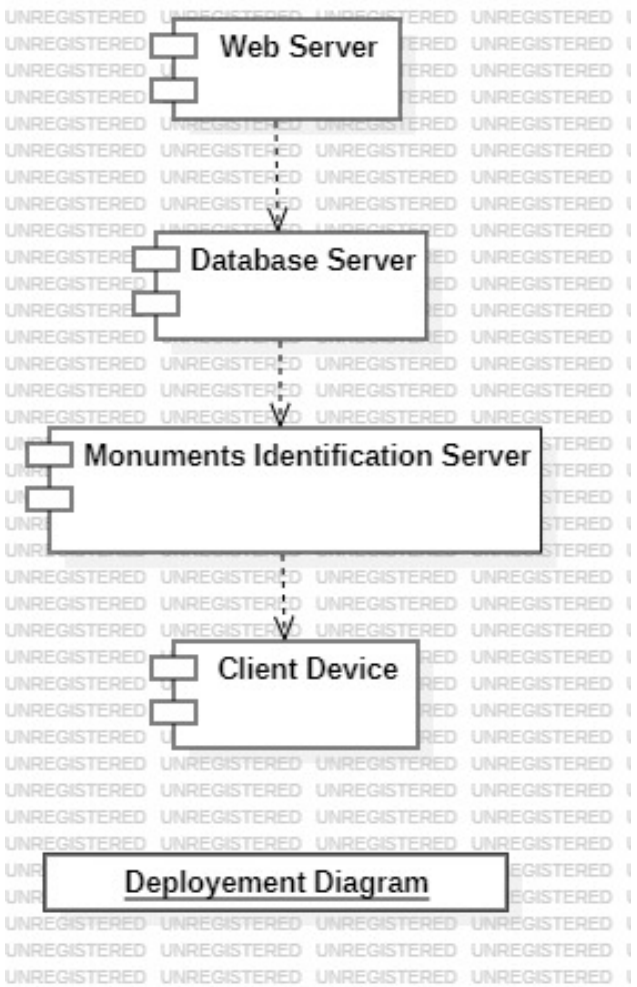

Figure: Deployment Diagram

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Software and Hardware Requirements

Hardware Requirement :

Processor - Dual Core

Hard disk - 160GB

RAM - 4GB

CPU - 2.0MHz (or faster)

Software Requirement :

Jupyter Notebook - Python

- Deep Learning Libraries

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Implementation

Algorithm:

- Importing some useful libraries.
- Load Model and Labels.
- Define Image Processing Function.
- Define Geocoding Function.
- Main Function(run).
- Run the Application.
- Visualise the results.

Modules in Project

- Streamlit.
- PIL (Python Image Library).
- Tensorflow.
- tensorflowhub.
- geopy.
- random.

Result

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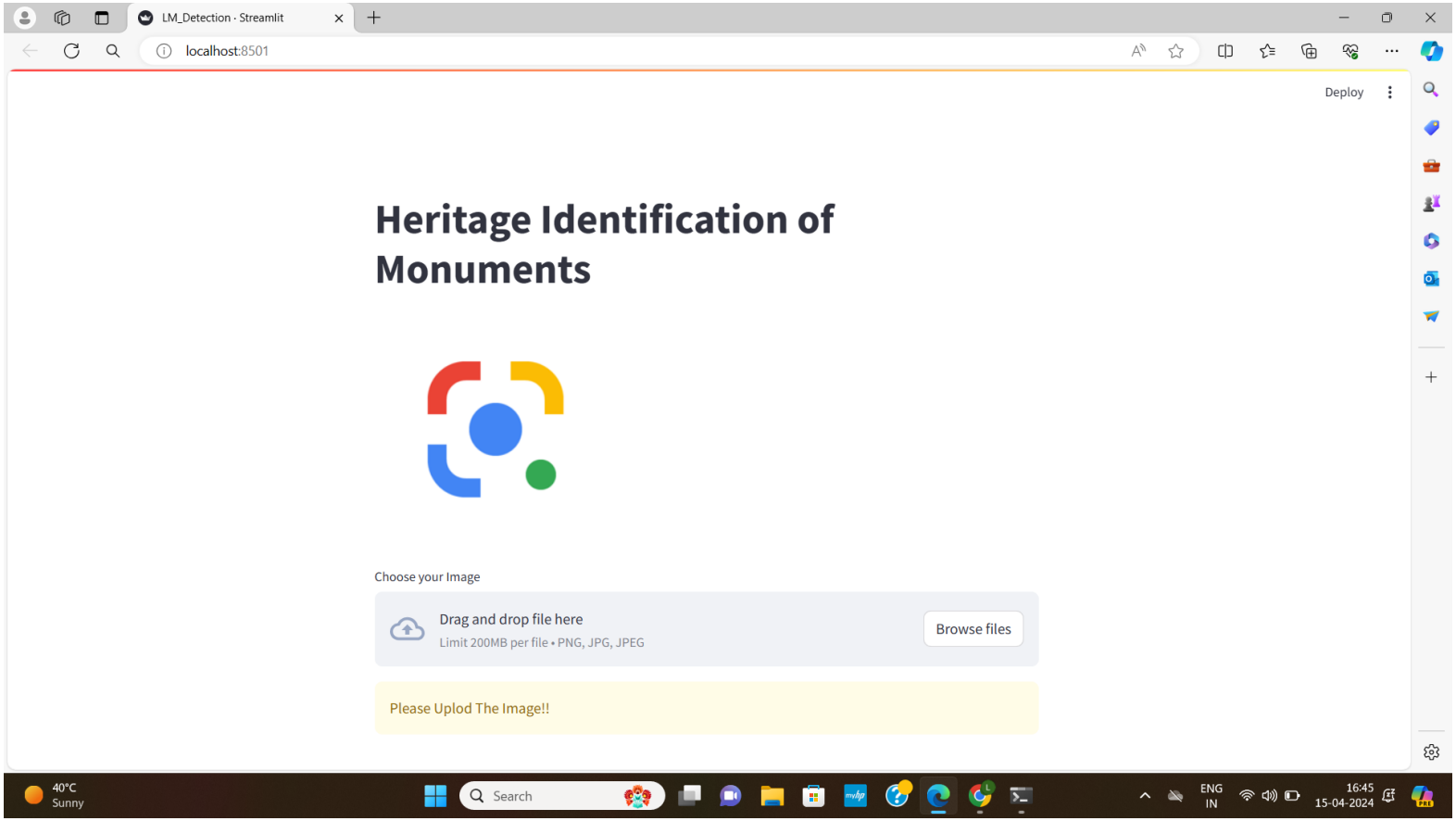

Figure: Input image

Result

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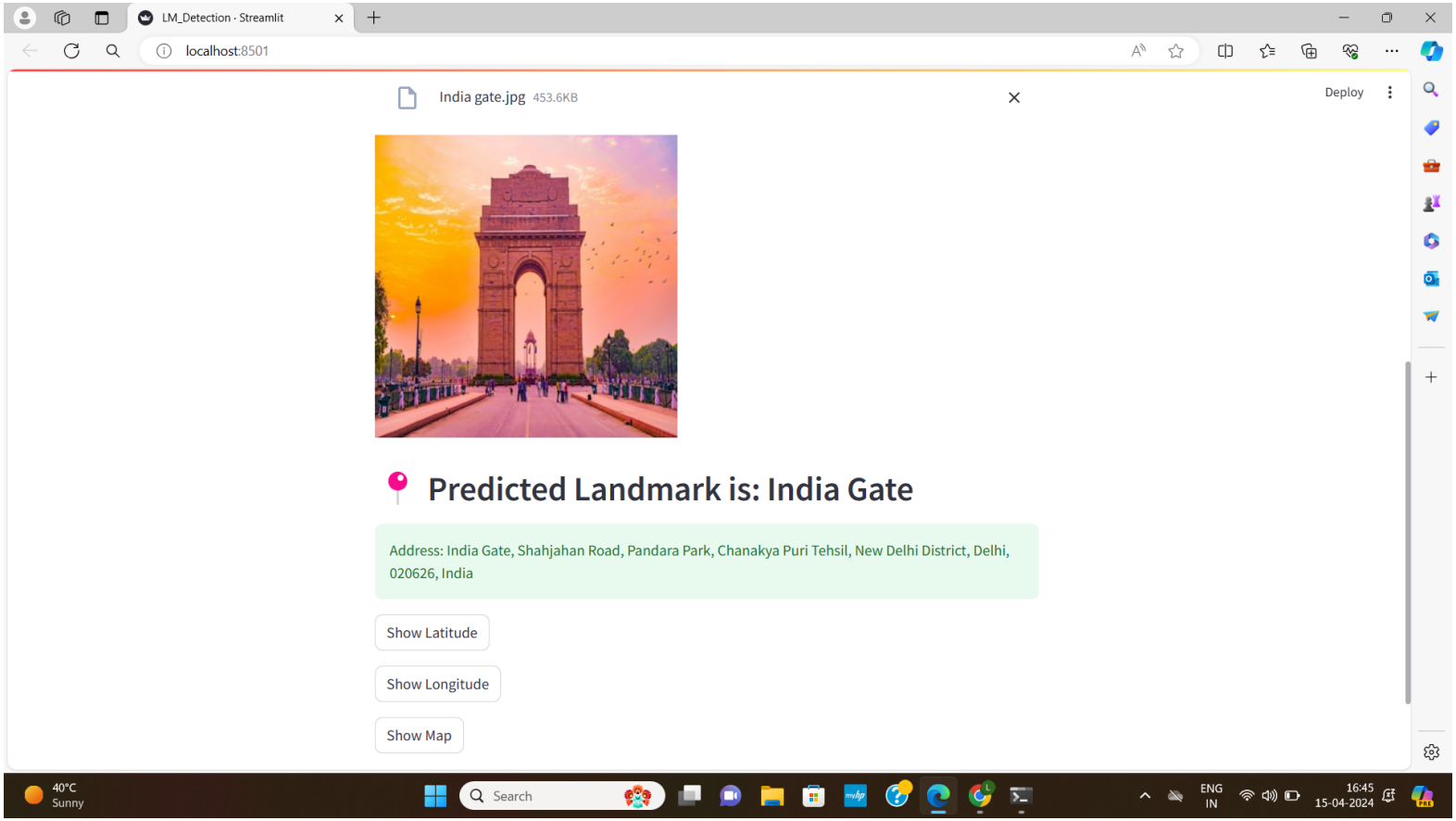

Figure: Predicted image

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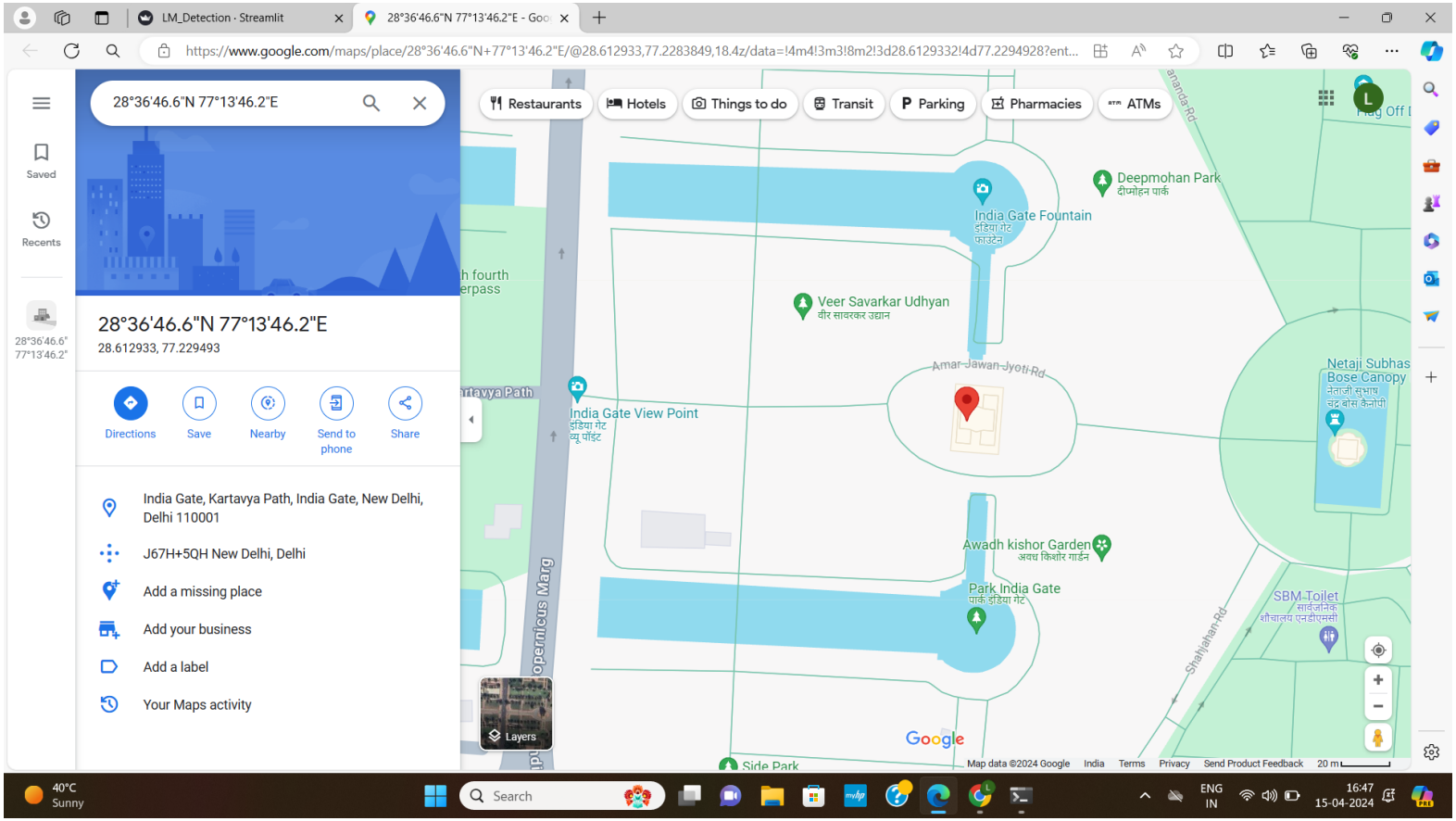

Figure: Map of predicted image

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Conclusion

- By training the model on a large dataset, we able to capture the unique features and characteristics of each monument type.
- Deep learning for heritage identification is a promising approach that can revolutionize the field of heritage conservation and management.
- This technology can improve the accuracy and efficiency of heritage identification, which is critical for their preservation.

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Thank You...