

Civil Engineering Insight Studio

INTRODUCTION:

Civil engineers usually analyze construction site images manually to understand materials, structure types, and construction progress. This manual process is time-consuming and subjective.

The **Civil Engineering Insight Studio** is developed to automatically analyze images of civil engineering structures using Artificial Intelligence and generate meaningful insights.

PROBLEM STATEMENT:

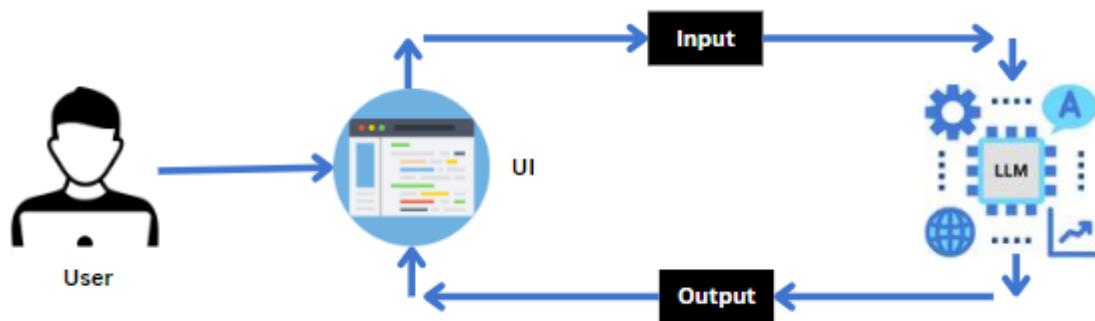
Civil engineers often face the challenge of manually describing structures based on images, which can be time-consuming and subjective. Without automated tools, generating detailed descriptions of civil engineering structures, including types, materials, dimensions, construction methods, and notable features, requires significant human effort and expertise. To address this challenge, there is a need for an efficient and reliable tool that can automatically analyze images of civil engineering structures and generate insightful descriptions, enabling engineers to make informed decisions and communicate effectively about their projects.

OBJECTIVES:

- To analyze civil engineering images automatically
- To identify construction materials
- To document project progress
- To generate structural insights using AI
- To reduce manual effort

SYSTEM ARCHITECTURE:

The system consists of a user interface, backend processing unit, AI model, and output display module. The user uploads an image and provides a prompt. The AI model analyzes the image and generates insights which are displayed on the interface



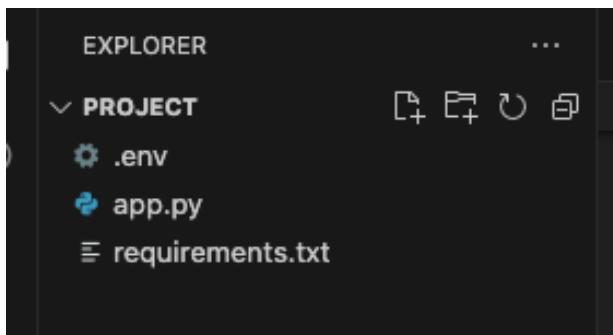
TECHNOLOGIES USED:

Technology	Purpose
Python	Backend logic
Streamlit / Django	Web framework
Google Generative AI (Gemini)	Image analysis
HTML/CSS	UI design
PIL	Image handling
dotenv	API key management

Project Structure

Create the Project folder which contains application file as shown below

- .env contains the api key for Google Ai studio
- App.py contains the code for running the model using streamlit
- Requirements.txt has all the requirements (packages and libraries needed to install before running the project)

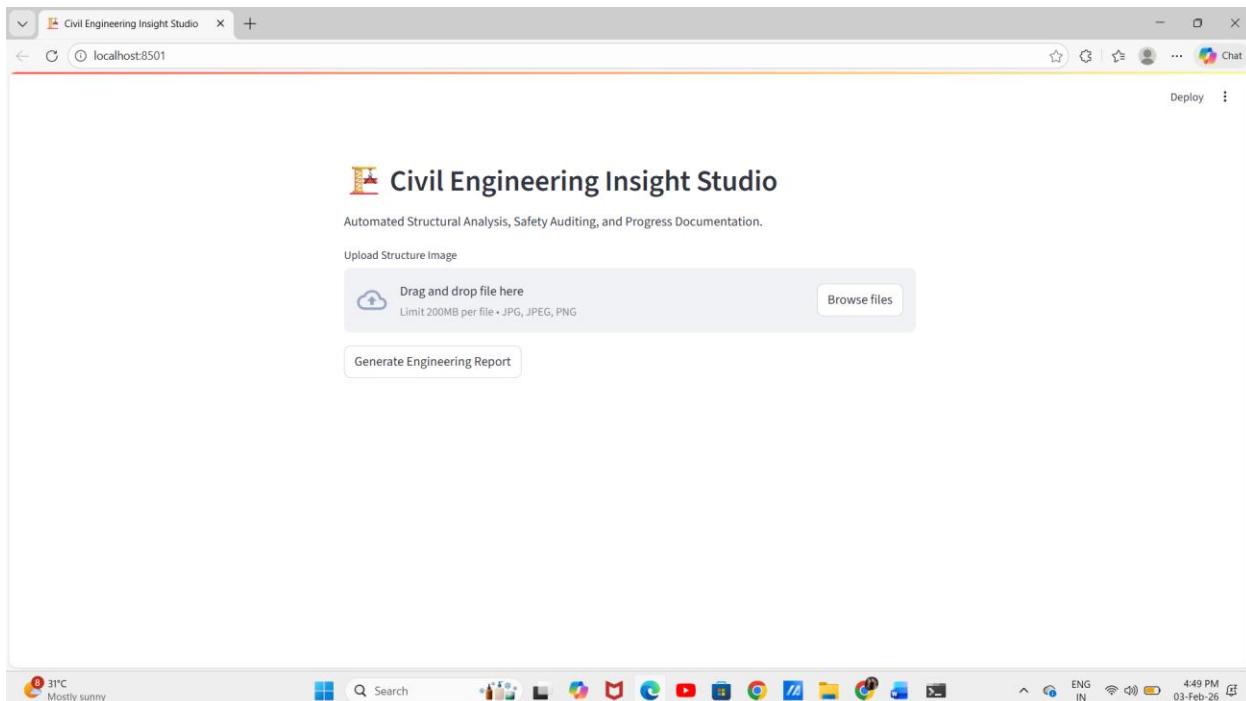


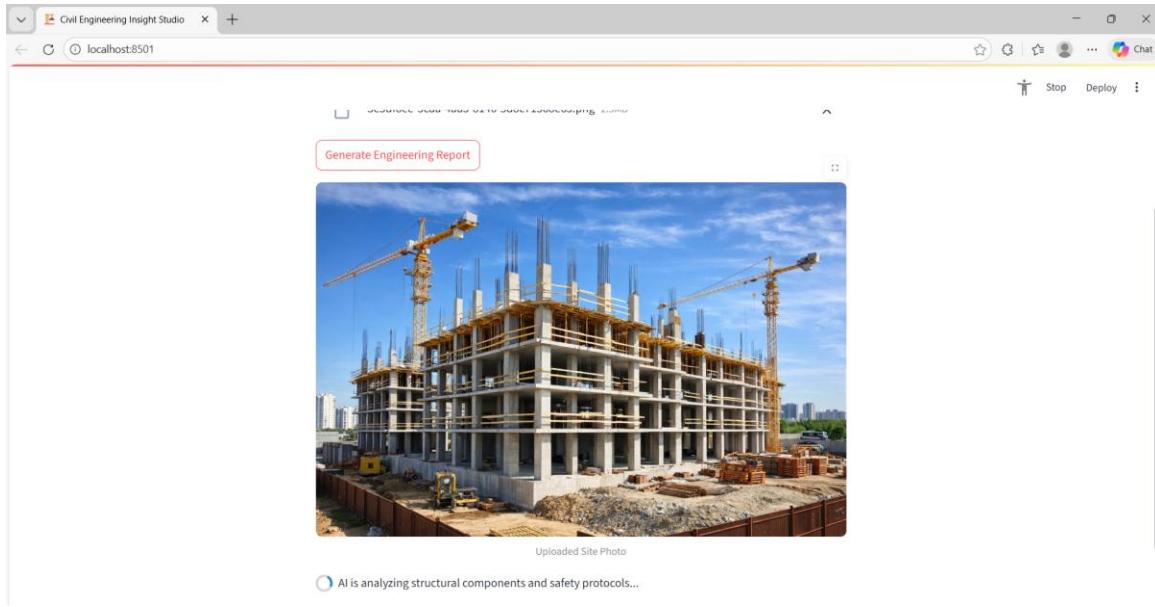
IMPLEMENTATION DETAILS:

- Image upload using web interface
- AI model processes image
- Prompt guides analysis
- Output generated and displayed

RESULTS:

The system successfully analyzes civil engineering images and generates structural descriptions, identifies materials, and documents construction progress.





Engineering & Safety Report
STRUCTURAL AND SAFETY ENGINEERING REPORT

1. RISK ASSESSMENT SCORE

2. STRUCTURE TYPE & MATERIALS

3. CONSTRUCTION PHASE

4. SAFETY ALERT FLAGS (Immediate Hazards)

5. ENGINEERING INSIGHT

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