Basic Details of the Team and Problem Statement

Ministry/Organization Name/Student Innovation:
Government of Jharkhand

PS Code: SIH1370

Problem Statement Title: Real time monitoring of infrastructure development

Team Name: VIGIL

Team Leader Name: Arvind Pathak

Institute Code (AISHE): U-0770

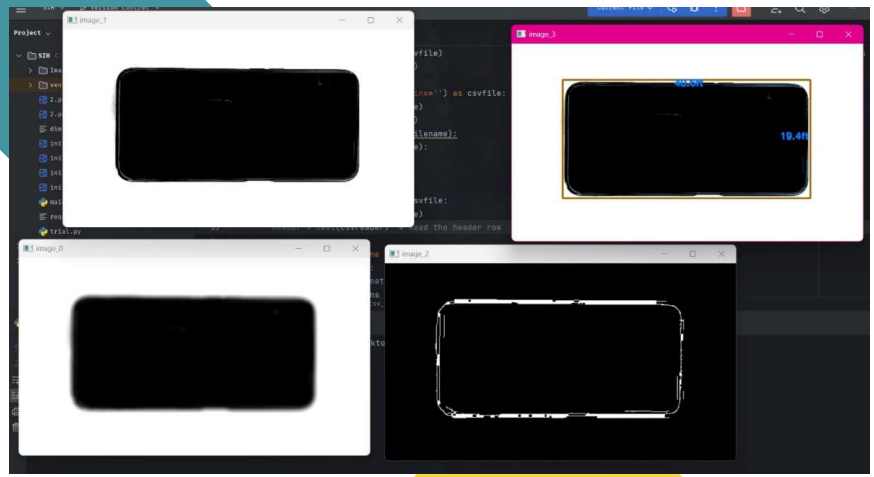
Institute Name: Indian Institute of Information Technology, Manipur

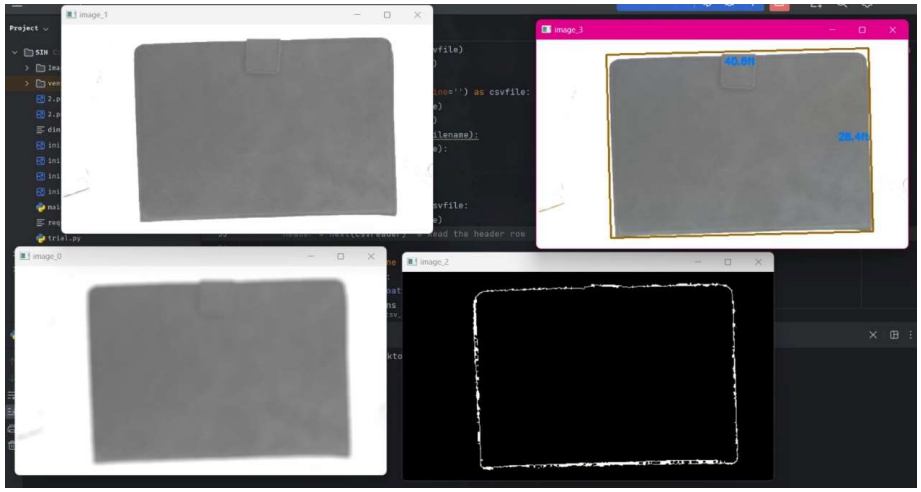
Theme Name: Smart Automation

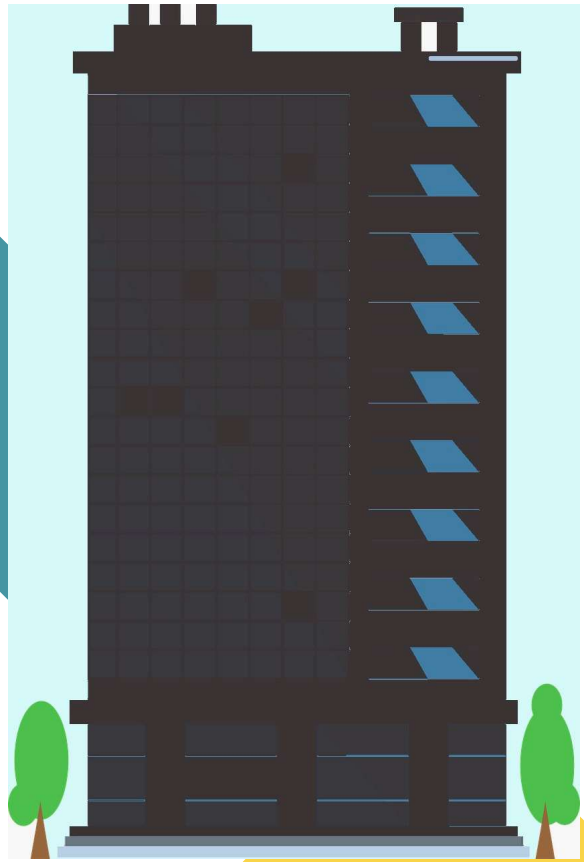
What we have implemented till now:

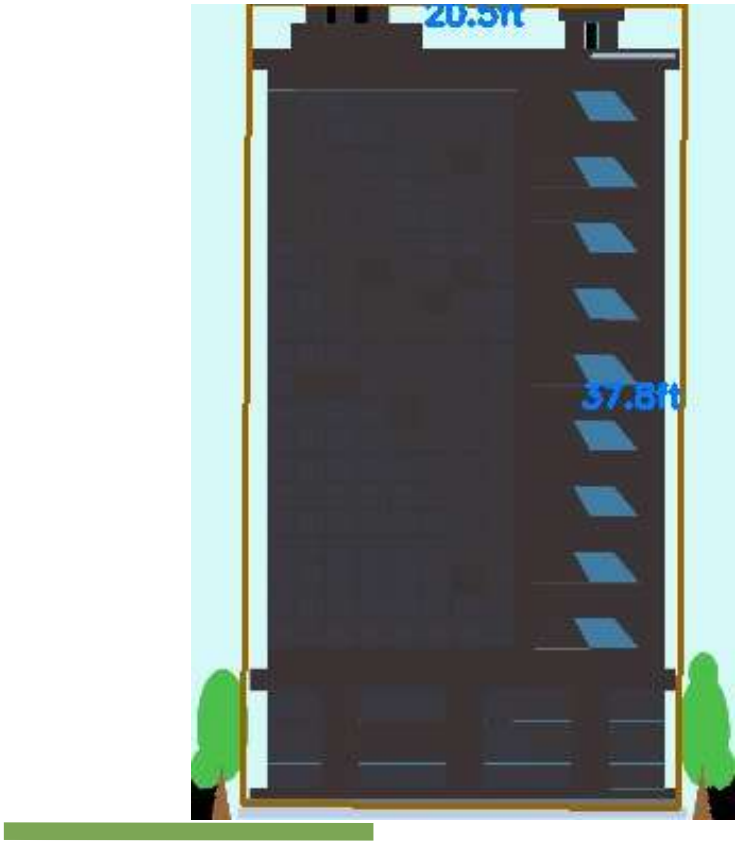
Dimension tracker

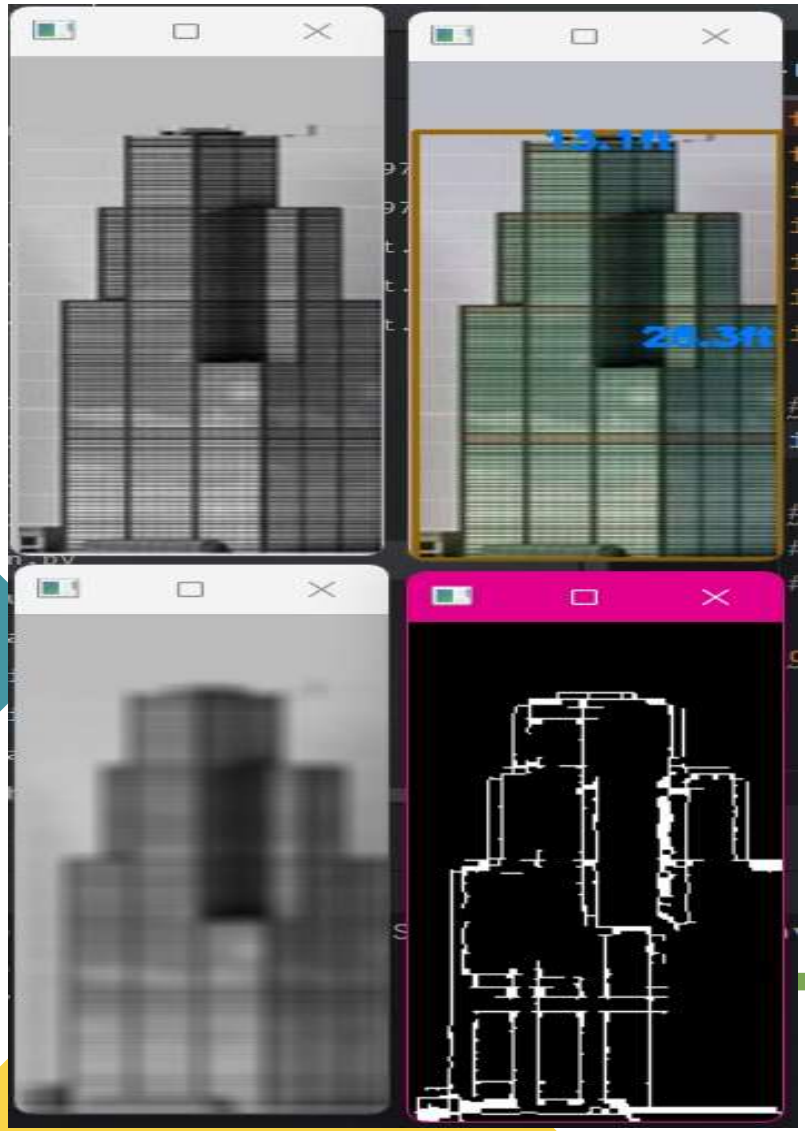
Tracking the progress of infrastructure construction by finding the differences in its dimensions after a certain period of time using opencv.
For eg:-





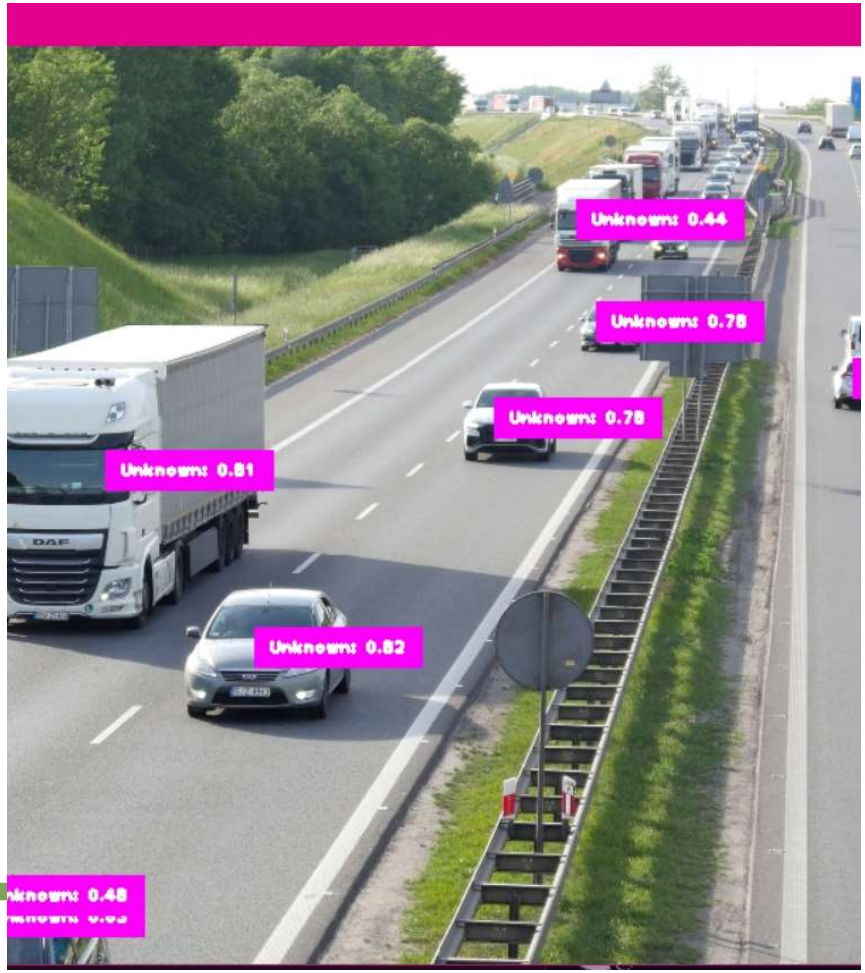



20.3ft
37.8ft


13.1ft
28.3ft

Object detection

Object detection using CNN (convolutional neural network) to check the presence of various objects like train, truck, tractor, worker, building etc. and then analyzing their movement to show whether work is ongoing or its stopped.



Face detection :

To monitor unauthorized absenteeism (workforce absence).

Safety Measures

Checking the presence of helmets on the head of workers and also checking the presence of other safety tools.

Problems we have faced while implementing this :

Datasets of actual building and construction sites are very hard to find to train our ML model.
Integration of backend data of the website with ML models .
Detecting objects in 2D is challenging due to the lack of clear shapes and perspectives. Cameras in phones typically capture 2D images, not 3D. This limitation makes collecting 3D data challenging. As a result, accurately identifying objects in these 2D images becomes more complex.

What we are planning to implement after this, (our future plans):

All the algorithms that are currently working as multiple small scale application will be integrated into a working single robust system.
Whole process can be automated with fixed CCTV camera.
Transmission of data between client and server, evaluating the quantity and quality of the products and materials used for construction.

Problems we might face after this :

Overseeing this application at an industrial or production scale, necessitating ongoing maintenance and optimization, might present significant challenges.

Thank You

Team Member Details

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