SIH - 2020

Ministry/Organisation: Department of Science and Technology
Problem Statement: PR430: Unusual Event Detection from Surveillance Video Shots
Team Name: pip_install
Project Name: Third Eye
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Third Eye

Project By:

Proposed System:

The project focuses on easing the video surveillance by detecting unusual or abnormal incidental events in an given input video by categorizing frames that have been predicted abnormal with an specified event and displaying the annotation of event on the screen. Project follows Supervised Learning Approach where each frame is extracted from the given video and predicting the events in the frame based on the model it was trained for.

Technology Stack:

- Technologies -
  - Deep Learning
  - Computer Vision
  - Image Processing
  - Web Technologies
- Tools -
  - Python
  - TensorFlow
  - Keras
  - Flask
  - HTML, CSS
  - OpenCV

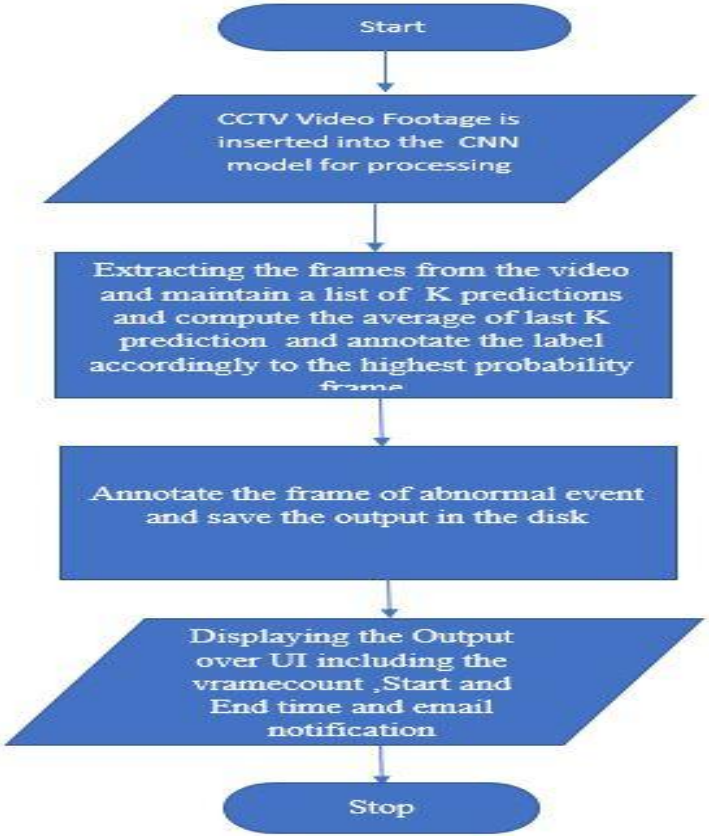
Approach:

- Videos can be understood by series of individual images, therefore dataset used here is of images where the CNN model is trained based on abnormal events in the dataset.
- After the model has been trained, the input video is provided from which we have to predict the events.
- Here the image classification as well as prediction occurs.
- The processed video is saved with annotation in the given directory.
- The abnormal events which has been occured in the input video is shown to the browser video with the frame count and the event time as well the email notification to a specific authority about the event.

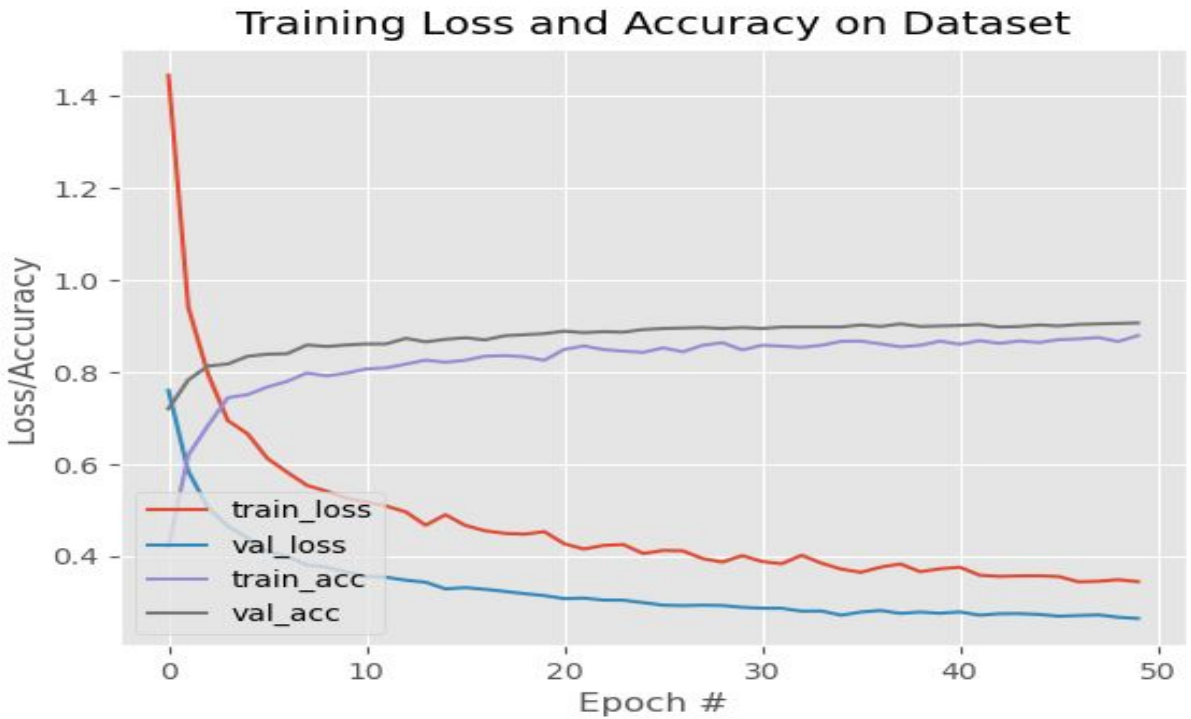
Algorithm:

1. The program processes the video, extracts the frames and loop over all the frames in the input video file
2. For each frame, pass the frame through the CNN.
3. Maintain the list of the last K predictions.
4. Compute the average of the last K predictions and choose the annotation with most number of corresponding probability.
5. Annotate the frame to which the abnormal event occurs and save the output the directory in the disk.
6. Show the output to the UI with label, frame count and event timing.

System Flow:

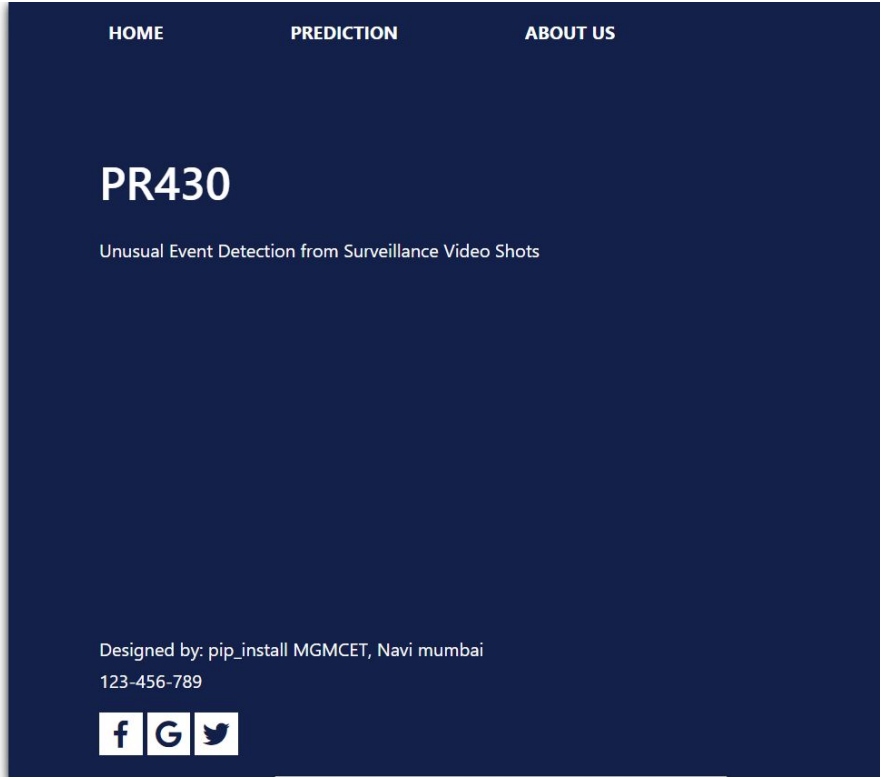

Start
CCTV Video Footage is inserted into the CNN model for processing
Extracting the frames from the video and maintain a list of K predictions and compute the average of last K prediction and annotate the label accordingly to the highest probability
Annotate the frame of abnormal event and save the output in the disk
Displaying the Output over UI including the vramecount ,Start and End time and email notification
Stop

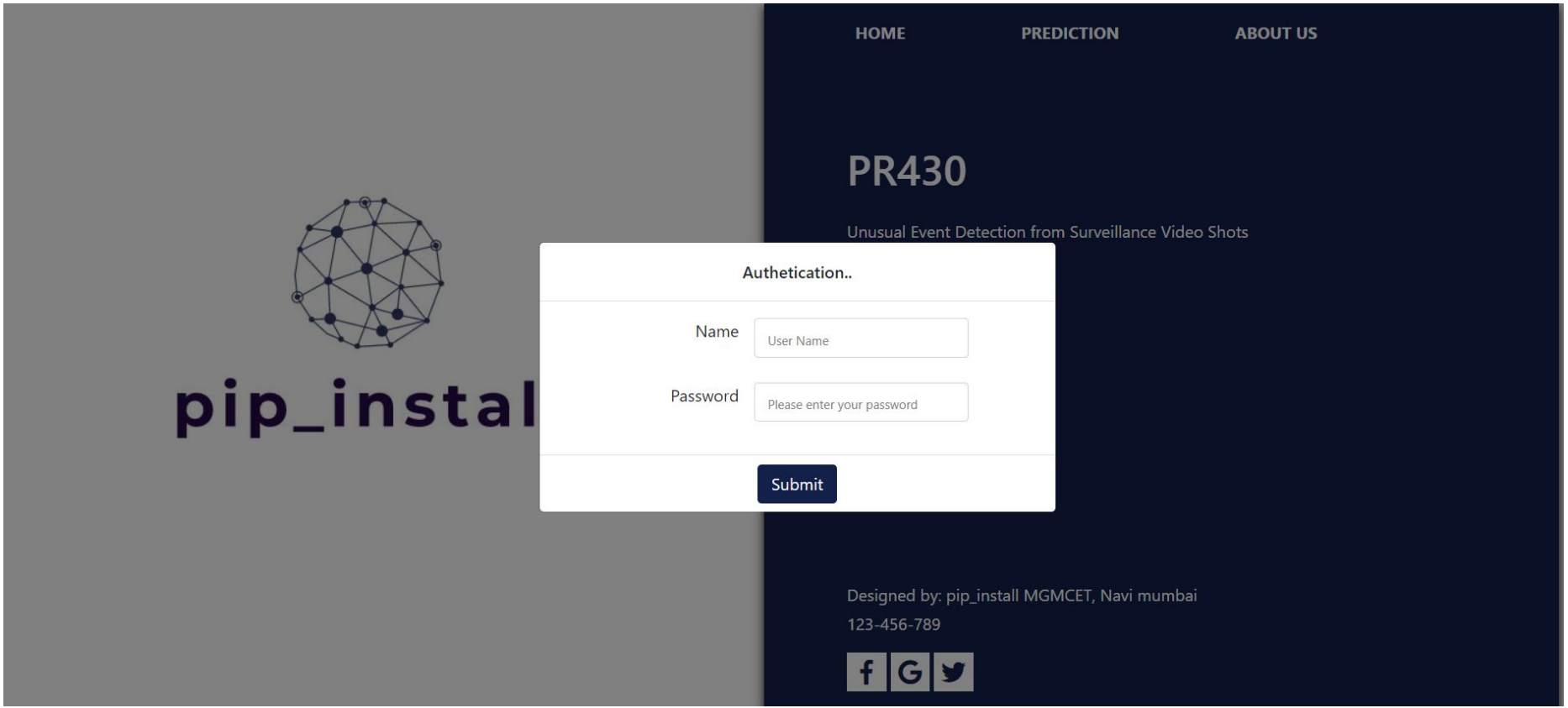
Accuracy Graph:



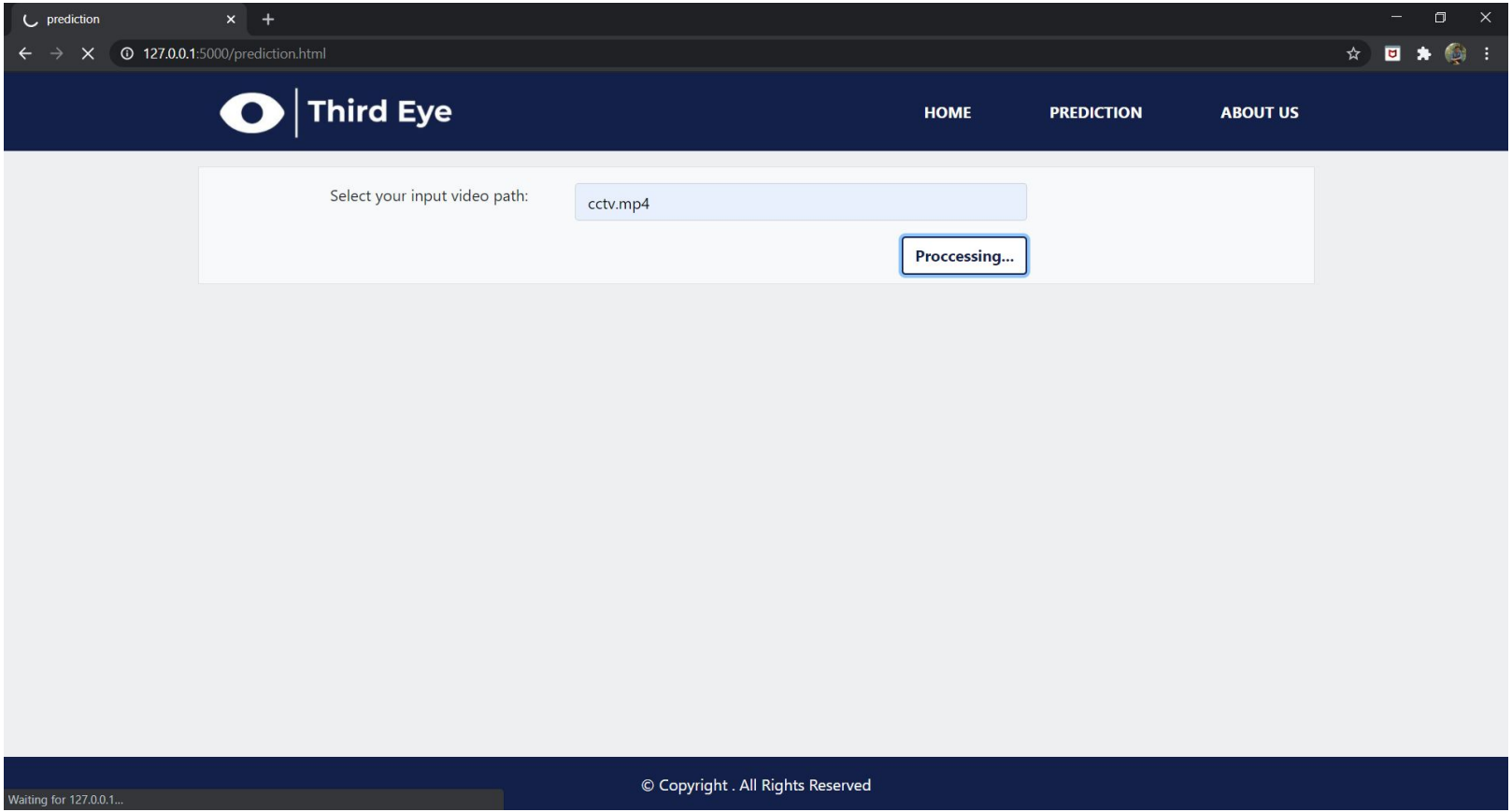
Interface:

pip_install




HOME
PREDICTION
ABOUT US
PR430
Unusual Event Detection from Surveillance Video Shots
pip_instal
Authetication..
Name
User Name
Password
Please enter your password
Submit
Designed by: pip_install MGMCET, Navi mumbai
123-456-789

Input Selection:

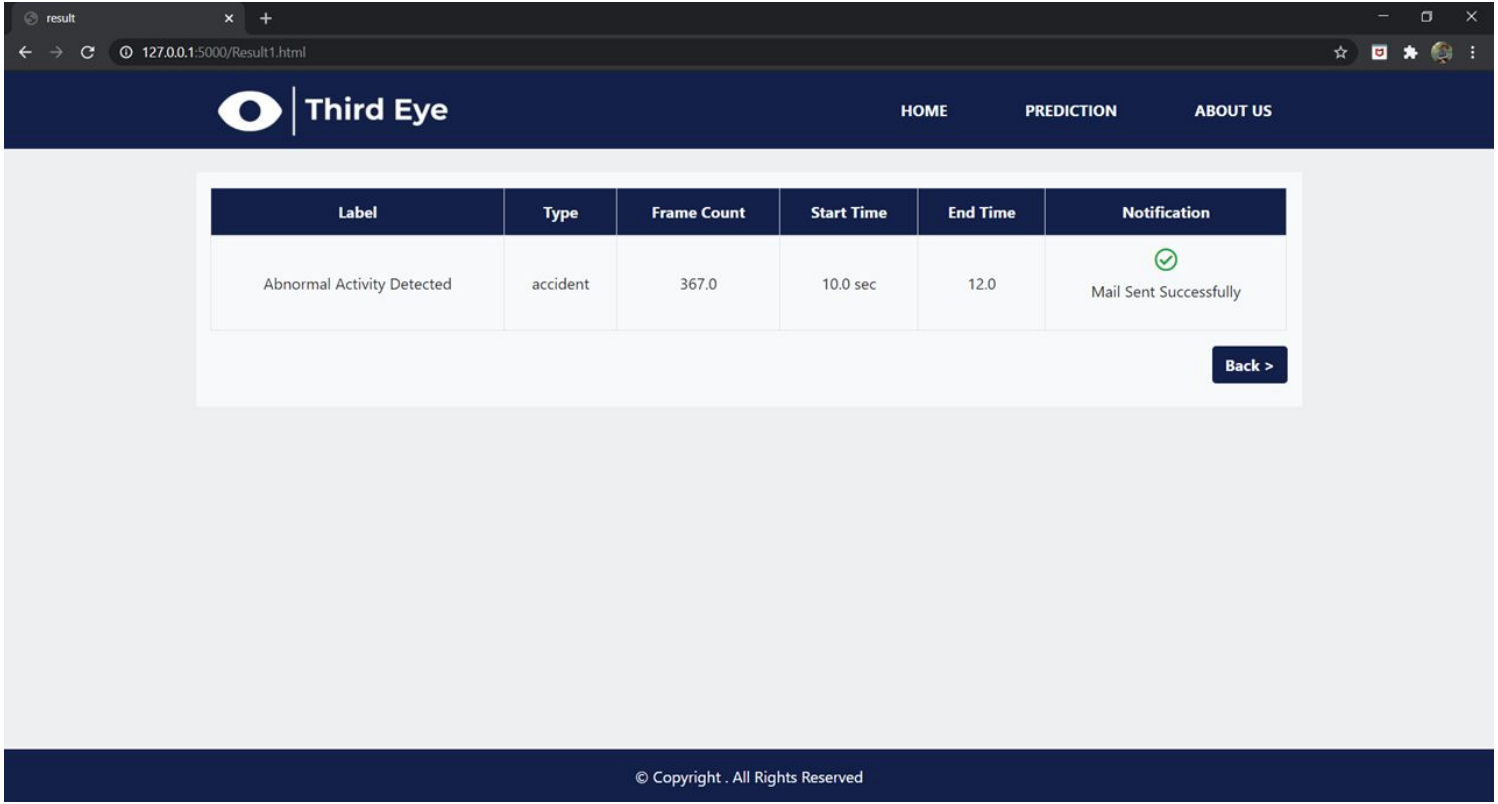


Working:

Some shots of working system.


Output
Alert!!: accident
DSPN TAMIL

Unusual Activity Duration and Mail System:



Result:

So far, the system uses a trafficnet dataset to which it is able to give a approximate result of predicting the events in the video shots. Also, the system is able to label the event occured in the given video and the time of occurence of event. System is capable of pushing the notifications of alert and its details through email service to the authorized person to necessary further action. System has designed to be user friendly so it can handled by naive user.

Future Implementation:

- Further, more we can can push message or call to the authorized person as notification so that alerts can be approached or handled more quickly and necessary actions can be taken ASAP.
- Live real time anomaly detection can be achieved with more accuracy observed in the feed

Thank you !!!!