HUMAN IDENTIFICATION IN NATURAL DISASTERS

UG PROJECT PHASE-1 REPORT

Submitted to

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY,HYDERABAD

In partial fulfillment of the requirements for the award of the degree of

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IN

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Submitted by

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2019 – 2023

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CERTIFICATE OF COMPLETION

UG PROJECT PHASE-1

This is to certify that the UG Project phase_1 entitled **"HUMAN IDENTIFICATION IN NATURAL DISASTERS"** is being submitted by *M.SHRAVYA (*H.NO:19UK1A0532), *S.SANATH KUMAR* (H.NO:19UK1A0526) ,*B.PRASANNA* (H.NO:19UK1A0564), SUHAIB AHMED *NIZAMI* (H.NO:19UK1A0507) in partial fulfillment of the requirements for the award of the degree of **Bachelor of Technology** in **Computer Science and Engineering** to **Jawaharlal Nehru Technological University Hyderabad** during the academic year **2022-23**, is a record of work carried out by them under the guidance and supervision

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ABSTRACT

A natural disaster is a major adverse event resulting from natural processes of the Earth; examples are floods, hurricanes, tornadoes, volcanic eruptions, earthquakes, tsunamis, and other geologic processes. According to the statistics, 68% of India's land is prone to drought, 60% to earthquakes, 12% to floods and 8% to cyclones, making India one of the most disaster-prone countries in the   world, affecting overall 85% of Indian land and more than 50 million people.

After the natural disaster happened the rescue team will go to that place to help the people but during such kind of disaster there will be places where humans cannot go and identify people to deliver help, by the time they identify them the person might lose his life. The technique of human identification through machine leaning process will play an important role. As the drone trained with the supervised SVM algorithms while capturing the video we use geolocator to find the location of that person. If it finds any human then a bounded box will be drawn. Then the location of that person will be sended to the higher authorities via SMS. This will save the lifes of many people during natural disasters.

Keywords : Natural disaster, SVM, Supervised Algorithms, Geolocator.

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1.INTRODUCTION

1.1 OVERVIEW :

After the natural disaster happened it will be difficult to identify the people who got strucked. To develop an application which will recognize the people in the places where human cant reach. For this we have Initialized our person detector. First, we make a call to hog = cv2.HOGDescriptor() which initializes the Histogram of Oriented Gradients descriptor.Then, we call the setSVMDetector to set the Support Vector Machine to be pre-trained person detector, loaded via the cv2.HOGDescriptor_ getDefault PeopleDetector() function. At this point our OpenCV person detector is fully loaded, we just need to apply it to some images.Along with that, we initialize geolocator and flask and video capture to capture video from the local file this is the main part of the application where actual detection happens Reducing image size ensures that less sliding window in the image need to be evaluated.HOG features extracted from and then passed on to the Linear SVM, thus reducing detection time (and increasing overall detection throughput).Resizing our image also improves the overall accuracy of our pedestrian detection.After applying non-maxima suppression, we draw the finalized bounding boxes. Once a bounding box is drawn, location is captured from the geolocator, and lat, lon values are appended to loc, and the image detected will be stored in local drive and lat lon of the detected images will be stored in excel.

1.2 PURPOSE:

As people travel widely these days for both business and holidays, a disaster can potentially result in the deaths of nationals from many different countries. During a natural disaster, because everything collapses, it is difficult to identify and rescue people who get stuck in closedareas. So to easily identify the places where people are there and rescue them quickly, a human and location of the human identification application can be developed.

2 LITERATURE SURVEY

2.1 EXISTING PROBLEMS:

 There are number of natural disasters that occur regularly in India. Some of them are earthquake, cyclones, landslide, cloudburst, storm, food, tsunami, volcanic eruption, heat wave, and cold wave. During the earlier day, the natural disaster information is communicated to others by a phone call or telegram, direct observation or personal interview. This process is used to gets delay the help or relief operations. When relief operations get delayed, the human and animal mortality increases and sufferings of people will increase. Due to natural calamities namely foods tsunami, storms, etc. occurring almost every year. Thousands of human life and millions of dollars are including loss of animals and property damage. It's being done. The internet technology developed can be used to some extent to reduce the sufferings of the tragedy victims. So to observe the moment of natural disasters in India, A wider source structure has to be proposed for India. After identifying the different types of natural disasters occurring in India the places of their occurrences and their frequency has to be documented.

2.1 PROPOSED SOLUTION:

The aim is to build an application that can detect people when it is streamed from a drone that is integrated with a camera. For instance, we build a web application that is used to detect people from a recorded video of a disaster-affected area. When people are detected in the video stream the images are stored in local storage and their current location is captured and stored locally in the application and the count of people which were detected is sent to the authorized .

3.THEORITICAL ANALYSIS :

3.1 Block Diagram :
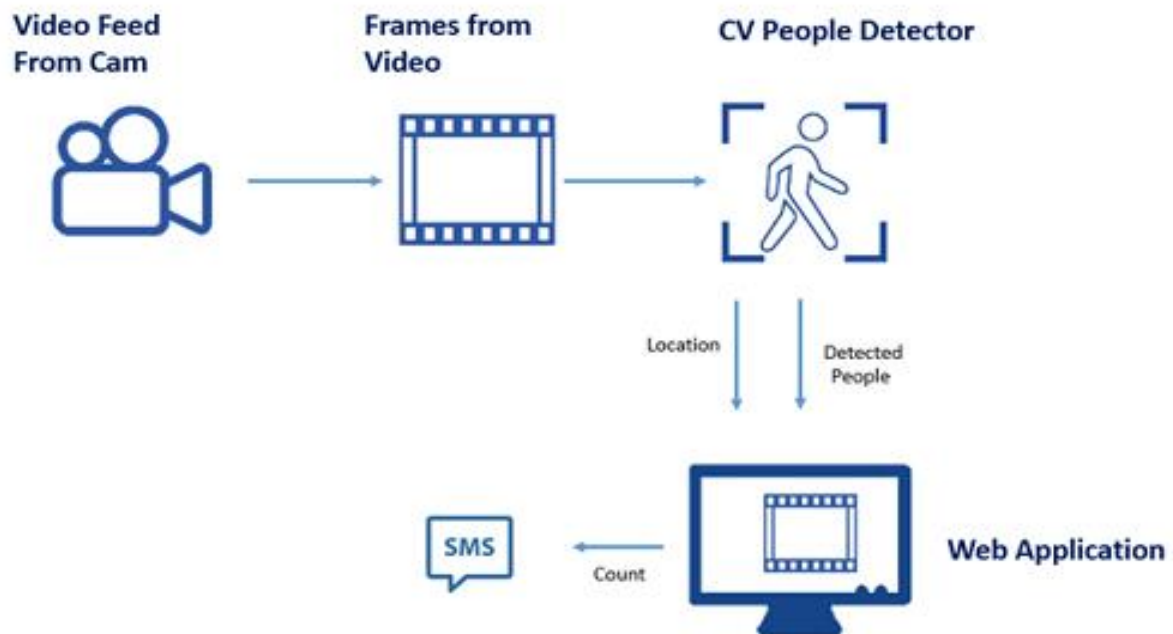
- Video Starts Streaming in the Web Application .We can also change to live video, When People are detected a bounding box will be drawn
- Location and detected people pictures are stored in local storage
- The total Count of people detected will be sent to authorized people via an SMS

3.2 Hardware and software designing :

- The following is the Hardware required to complete this project:

- Internet connection to download and activate

- Administration access to install and run Anaconda Navigator

- Minimum 10GB free disk space

- 500 megahertz (MHz)

- 256 megabytes (MB) RAM

- 1.5 gigabytes (GB) available space

- 1024x768 or higher resolution monitor

- Camera to capture the video

- The following are the software required for the project:

- Spyder and Pycharm Community

- Microsoft Excel 2013

- FlaskWebFrameworks

- OpenCV

- TwilioSMSHardware

4. EXPERIMENTAL ANALYSIS

Support Vector Machine :

Support vector machine in machine learning is defined as a data science algorithm that belongs to the class of supervised learning that analyses the trends and characteristics of the data set and solves problems related to classification and regression.

To separate the two classes of data points, there are many possible hyperplanes that could be chosen. Our objective is to find a plane that has the maximum margin, i.e the maximum distance between data points of both classes. Maximizing the margin distance provides some reinforcement so that future data points can be classified with more confidence.

We call the setSVMDetector to set the Support Vector Machine to be pre-trained dector, loaded via the cv2.HOGDescription_getDefaultPeopleDetector() function.

5. FLOWCHART
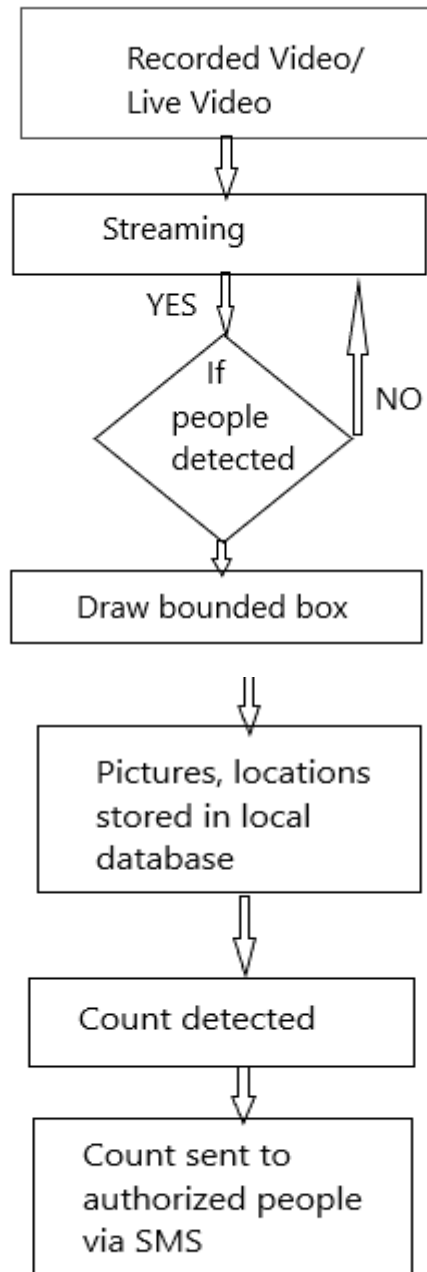
6 RESULT

7. ADVANTAGES AND DISADVANTAGES

ADVANTAGES:

- As the technology is growing, newer technologies should get adapted. This technology of detecting victims is very helpful because it is a quicker and easier method.
- The victims can be saved before more destruction can happen.This application can be used for other purposesal so not just during disasters.
- This project has dealt only with the software aspects of a detection system. Obviously a human detection system is not of much use if it can only run by itself on a PC.
- This would probably require the use of more sophisticated methods than those employed in the present system such as part-based models of the humanbody.

DISADVANTAGES:

- This project has dealt only with the software aspects of a detection system. Obviously a human detection system is not of much use if it can only run by itself on a PC.
- This would probably require the use of more sophisticated methods than those employed in the present system such as part-based models of the humanbody.
- This application can be implemented only in places with a proper network. During disasters, then network availability will be less.

8. APPLICATIONS

- The first application of this is in the time of natural disasters to identifity the people.
- When someone got strucked in any kind of natural disaster will be identified in the video with the help of bounded boxes.

- This technique can be used in identification of humans duringfire explosions, natural calamities like earthquakes, tsunamis,etc. The whole fully developed device can also be used to detect victims in socio wars. This can be kept in public places like restaurants, parks, gyms, schools etc. to detect and identify the victims of any harassment orinany danger.

9. CONCLUSION

The application that can detect people when it is streamed from a drone that is integrated with a camera is successful with our project. we build a web application that is used to detect people from a recorded video of a disaster-affected area. When people are detected in the video stream the images are stored in local storage and their current location is captured and stored locally in the application and the count of people which were detected is sent to the authorized people.This application will save the lifes of many people who got strucked in the natural disaster affected places.

10. FUTURE SCOPE

In the future, during disasters, drones can be used for capturing the images and location of the victims using a highly focused camera with high megapixels. Also, the accuracy and effectiveness of the working of the software application can be increased by working with computers with high computational capacity.

Technology plays a large role in forecasting natural disaster and communicating this information efficiently. Search and rescue operations where rescue workers attempt to find andsave the lives of victims of the disaster is largely carried out by humans with use of low-tech tools.

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