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Accident Intimation System Using Image Processing

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Abstract - *The road accident is the major cause of unnatural death in the world. This is due to increase in the population and number of vehicles the accident rate has been increased. The major causes of death is due to delay in medical attention, this is because of delay in intimation. The proposed system acts as the detecting the accident has occurred and intimating to nearest hospital. The convolutional neural network algorithm is used for detecting the accident has occured and the simple mail transfer protocol is used for communicating to nearest hospital. By this there will be no delay in intimating the accident if occurred, the rate of death will also be decrease*.

Key Words: **CNN, SMTP SERVER.**

1. INTRODUCTION

The accident intimation system will analyzing the accident detection through image based traffic surveillance camera. This has always been a challenging task because detecting the accident accurately is not easy task for implementation. Hence we need a system that can maximize the number of frames per second and also achieving the acceptable performance for the detection purpose.

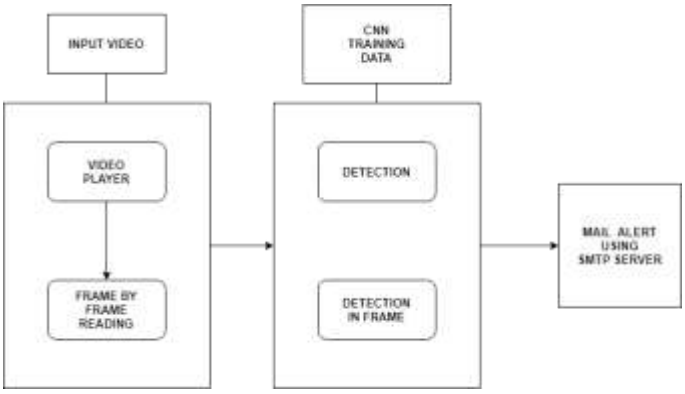
The important stage is vehicle crashing monitor system that is useful for detecting the video by each frames and also accurately tracking all the vehicles across each frame. Tracking, vehicle detection, and change in orientation can be determined the process of crash detection. The tracking can be viewed as correspondence problem in which the goal is to determine that the vehicle detect in the next frame is to be given in the current frame. This will be calculating the each and every frame and the detection will be taking place. The task of tracking the is performed by the system but it is quite challenging because it should detect each and every frame in the video.

The convolutional Neural Network will be play the important role in this detection process the working process of the CNN algorithm are Convolution, Apply the ReLu (Rectified Linear Unit), Pooling, Flattening, Full connection, Softmax. These process will the taken place in the CNN algorithm.

The three main items that are used in the process are input image , feature detector and feature map .The input image is the image for the detection purpose .The feature detector is a matrix format that will usually be in the form of 3x3 and in some areas it could also be in the form of 7x7 matrix. A feature detector is a nervous system used for extracting the related behaviour .The feature map will be detecting the location. Apply ReLu(Rectified Linear Unit) is to increase the non-linearity in the process.

The pooling function is to reduce the spatial size to reduce the amount of computation in the network .Each feature mapping will be operated by the pooling layers in independent manner some types in pooling are max pooling ,average pooling etc .Max pooling will be selecting the maximum amount of elements from region that has been covered . Average pooling is the process of average number of elements will be taken and will be computed.

Flattering, Full connection, Softmax all these three process are classification process in the CNN algorithm. These are the various processes that are taken place in the algorithm. The second main module is the SMTP server which is a communication protocol used for transmitting the electronic mail. This SMTP is used here for intimating that the accident as occured by a message.



II. DATASETS

The images for the vehicles are been collected. Each and every image of the vehicle should be different from another , because only then they will be able to detect all the vehicles. For this not only images of a particular type of transport are been collected. For detecting the accident also the data set are been collected only by these set of image they can be identified that the accident has been taken place or not. All these data set will be trained in RCNN methodology for the accident detection.

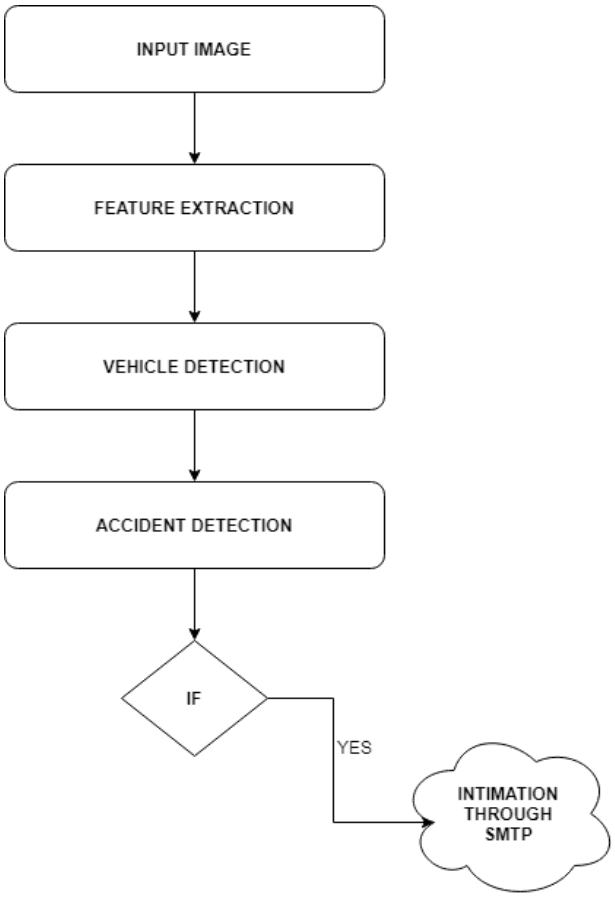
Fig1:

III. PROPOSED SYSTEM

The accident intimation system consist of two main: modules accident detection and intimation of accident.

In the detection part the dataset will the playing a major role for recognizing the accident has occurred, the set of images that have been trained in the RCNN will be detecting that the accident has occurred. The set of accident images will be given if any frame in the video has the identical image set then it will be identifying as accident has occurred. The second module, accident intimation will be processed the SMTP server. If the system has confirmed that the accident has occurred then the SMTP will be sending a mail to the nearest hospital

Fig2: BLOCK DIAGRAM OF THE PROPOSED SYSTEM



IV. MODULES

a. Input Image

b. Feature Extraction

c. Vehicle Detection

d. Accident Detection

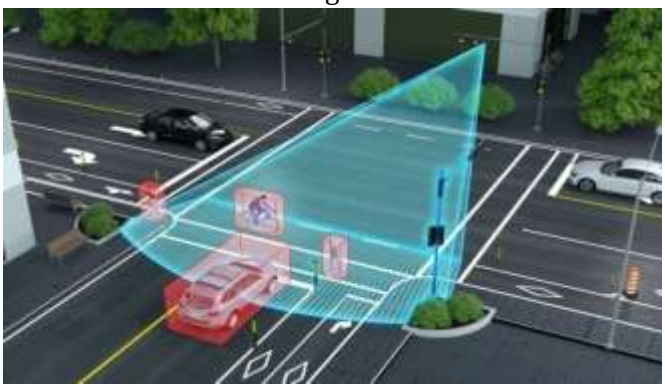
e. SMTP Server

g. Output

a. Input Image

The input video will be reading by each and every frame. Thus by this the input dataset and if any frame in the video is been matched then the accident will be detected. The input video will run using matlab.

Fig:3



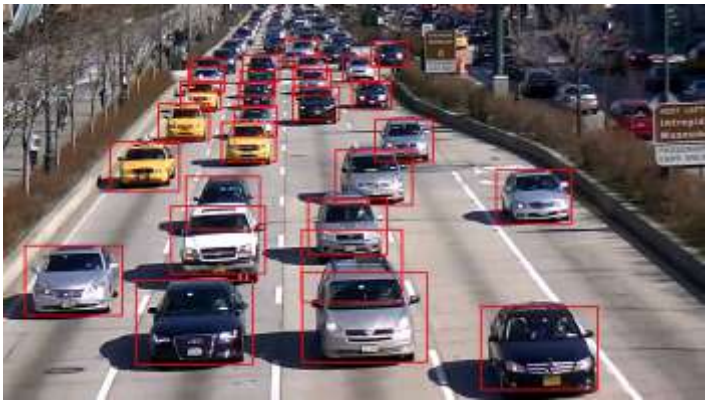
b. Feature Extraction:

If the input data is too large in size then the feature extraction will be helpful .For the convolutional neural network the SURF (Speeded Up Robust Feature) algorithm is used for extraction.

c. Vehicle detection

The vehicle detection is been detected by the trained data set .The annotation part, reading the video will be processed by matlab .Thus if it identified if any vehicle passes through it, then it will be automatically check the trained data set that is the process is been match. If they are similar to each other than detected object is said to be a vehicle.

Fig4:



d. Accident Detection

The accident detection will be performed by the detecting each and every frame in the video .If will be detecting all the vehicle in each and every frame .If the accident has occurred the it will be reading the trained data set, if they are similar then the accident will be detected

Fig:5

e. SMPT Server

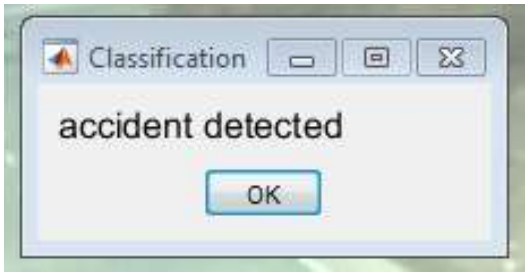
The SMTP server will be acting as a indicator to the hospital if accident has occured .This SMTP server will be activated only if any accident has been detected .The Email id of the hospital will be initialized in the code. Thus the process of intimation will be intimated only to that particular mail id.

g .Output

As input is taken in form of frames from the video. The image frames and the trained data set will be compared and the output will be detected.

Fig:6

Fig:7



V. CONCLUSION

Thus by detecting the accident and intimating it to the hospital will reduce the number of unnatural death. This can be proposed easily in surveillance camera, so this system can be placed all over the city. Thus it will be helping the people who met with the accident for implementation purpose.

VI. RESULT

In this paper, we have proposed the accident detecting using CNN algorithm developed in matlab, and intimating that the accident has occurred by using SMTP Server.

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