# Road Traffic Congestion using Local Binary Pattern

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**Abstract:** *Today's major problems in the world are traffic. reduce the traffic congestion in the world is several options. Now a days, road traffic is manager problem. The plan is proposed and implemented the entrepreneur and ceo of spacex and tesla using this tunnel boring tecnique. The clever technique is proposed by proposed work. To make used the image processing to estimate the traffic congestion in the power of real time. The representation of the visual traffic is provided by the proposed system which will help the authorities while monitoring the traffic. there are many techniques to proposed a system, it requires higher computation resource, the proposed system is lite on computation resource thus easier to run. Standard way of estimating the traffic equipment by examining the different ways like normal speed of the vehicle and so on. In the proposed system , the traffic is estimated like humans do. The humans analyze the traffic just by looking, just like that the proposed system works similarly by utilizing the advancement in recent technology in the field of Machine Learning algorithm and image processing. By utilizing this technology we can teach the computers to detect and estimate the amount of traffic in real time.*

**Keywords:** Traffic Congestion

## I. INTRODUCTION

Now days, while driving vehicle traffic congestion cause problems on the road, this will take probelm to passenger. Due to this the economy every city is affected day by day. Heavy traffic happens due to poor city planning, small roads, railway crossing and so on. The government implements many rules to control traffic jam, many drivers don't follow the traffic rules. Numerous crossing in the cities the traffic stop lights don't work it may leads to traffic jam. Many traffic police are placed to handle the traffic jam, in order to manage the traffic flow, the traffic police are placed accordingly where the police officers direct the traffic and clear the traffic jams if traffic jams occur.

## II. LITERATURE SURVEY

B. Tian et al. [1], the author proposed a solution which detects and analyze the back lights such as brake lights and license plates using a camera mounted on the junction. The system utilizes Markov Random Field (MRF) to merge the distinct parts of the car, then in sequence to recongnize the vehicle a specific filter called Kalman filter is then implemented after that the vehicles in the frames are detectable.

Y. Li et al [2], a hybrid approach is used for the identification of the objects. The hybrid approach examine a number of proporties such as brokenness of the quality, color of the object and flatness of the object.

F. Xia et al [3], a holistic approach is used for the detection of the object. The holistic approach performs by using filter called Spatiotemporal Gabor The tecnique mainly based on linear tranformation on each one of the pixels of the frame along with the balanced which will be put in every pixel of the images .

Y. Yufei et al [4], the utilizes a wireless sensor node which is placed at both ends of the road. Depend on the sensor readings the traffic density will be estimated. This type of traffic estimation needs additional hardware and will be reduce accuracy.

## III. PROPOSED METHODOLOGY

The proposed system performs traffic analysis using image processing technology along with different algorithms. The proposed system mitigates the need for manual visual inspection of the traffic. The system also includes a notification system which sends SMS to the authority in the event of high traffic detection.

### 3.1 Algorithms: Local binary Pattern

The main goal of the LBP is narrate the part of a image cells using binary code. The LBP algoritms needs to identify the local properties and their characteristics.

### 3.2 Working Methods

- Tranform picture into gray scale
- For each pixel takes as gp in the picture and take neighbour that arround focal point of the co-oridates of gp are given by (gc_X-Rsin(2pi*p/P),gc_y+Rcos(2pi*p/P))
- Take focal point pixel(gc) and put its thershold for its P neighbour
- Put to 1 if the value of the adjacent pixel is more than or equal to the value of the total point fixel,otherwise 0.
- Now generate the LBP value : In counterclockwise, take binary number includes digit adjacent to the focal point pixel is also known as LBP-central
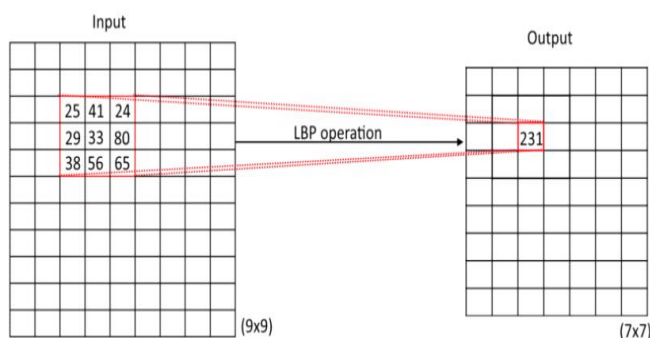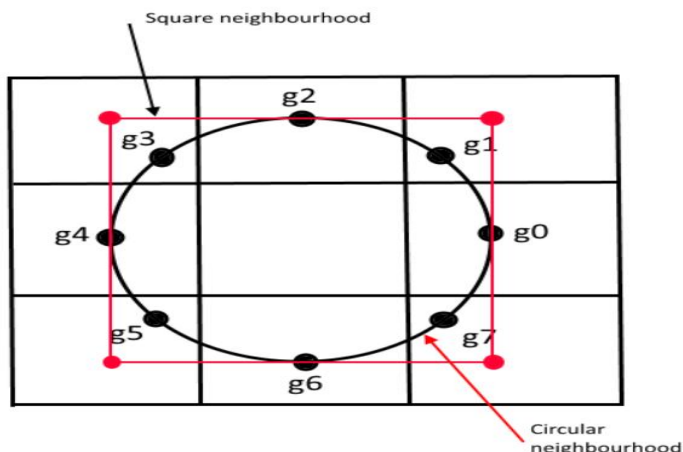


Figure 1: Input and output local binary pattern



Figure 2: Previous traffic matrix



Figure-3: solve traffic matrix
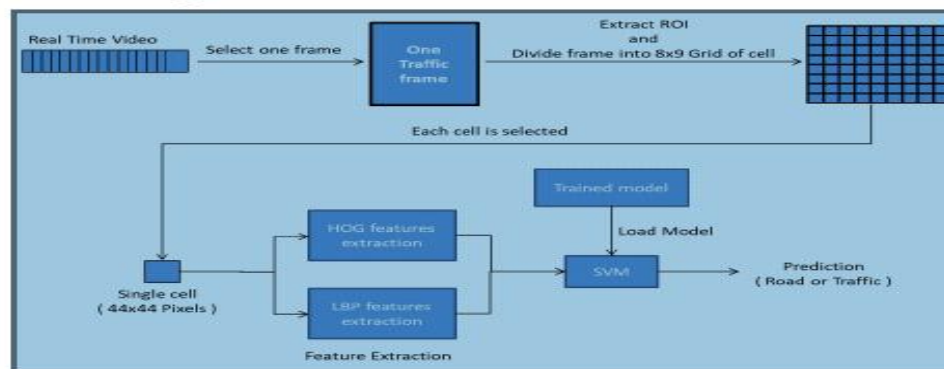
### 3.3 System Design



Figure 4: Flow of execution for prediction

The above figure indicate the working of the system on a single track(road). The camera feed from the intersection take as input to the system, where the frames of the video hold the data of the single track. The frames are extracted from the vedio streaming are used image processing technique. After extraction, the video frames of the Region of Interest is extracted from each of these frames. Once the region of interest is selected from the fixture is then divided into many more parts of an 8X9 grid of cells. In each cell of the grid it contains 44X44 pixels. To these cells the features are extracted, the extraction done by+ using multiple algorithms, such as Histogram of Gradient extraction and Local Binary Pattern extraction, after extraction it is converted into vectors containing features. The extracted features is pre-trained by using SVM model. Using the SVM model on each of these cells a prediction is performed, the prediction done on either a road or traffic. Using this predicted output we can estimate the traffic density level. The traffic levels is classified as low,medium and high, notification message will be sent to the control room.GSM module will be connected to the Arduino microcontroller.

### 3.4 Experimental Analysis

The analysis done by the Economics and Business Research in 2014 shows that around $124 billion is lost due to traffic jams and america. It is predicted that this loss will rise to $186 in the year 2030. The chart illustrated in the figure 1 contains the data from World Resources Institute shows the relation between losses and traffic jams in the region of South-East Asia in the year 1996 -1997.
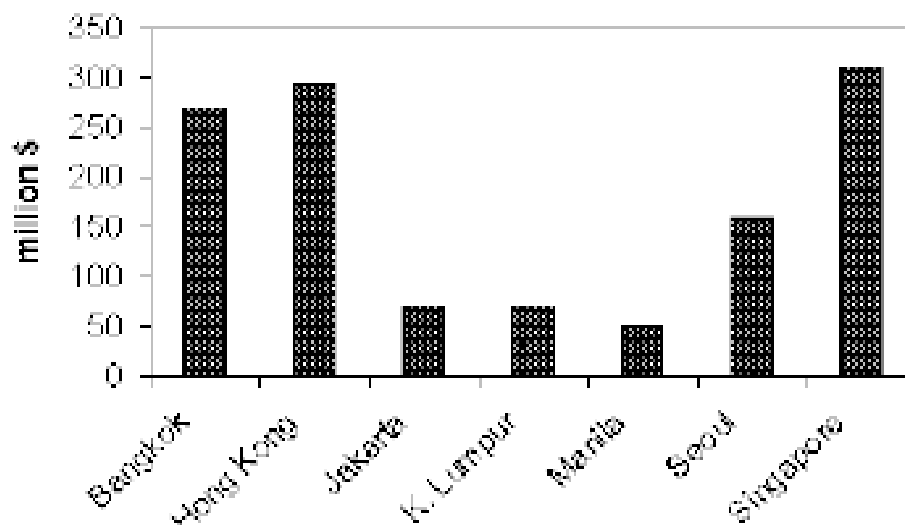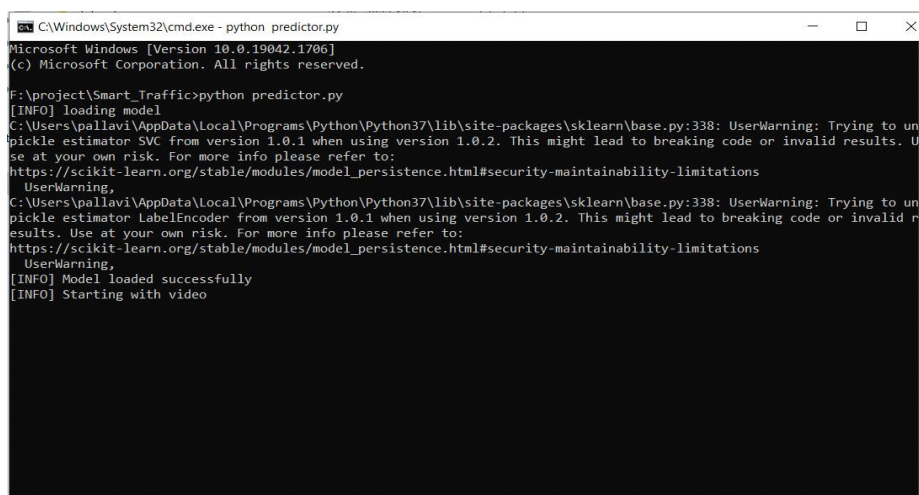


Figure 5: Relation between loss and traffic jams

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It is importantly to lower the amount of vehicles that are moving on the road needs advanced technology. The traffic has to be managed as much as feasible to loss the loss in day to day life. It is needs to evaluates the traffic density in real time in sequence for the traffic authority to monitor and control traffic.

With the hike in advancement of technology many more researchers suggest different solutions to lighten the traffic congestion. In this proposed system it needs different algorithms in order to evaluates the traffic density in real time.

### 3.5 Results



Figure 6: Loading Process



Figure 7: Input Video

In this Result Page Indicate Traffic Levels. In this proposed system two colours are used to represent the levels. There are two levels, high traffic and low traffic.

Figure 8: Low Traffic



Figure 9: Output

If the Green Rectangle Box indicates Low Traffic only display the message Because the chances of occuring low traffic is high.
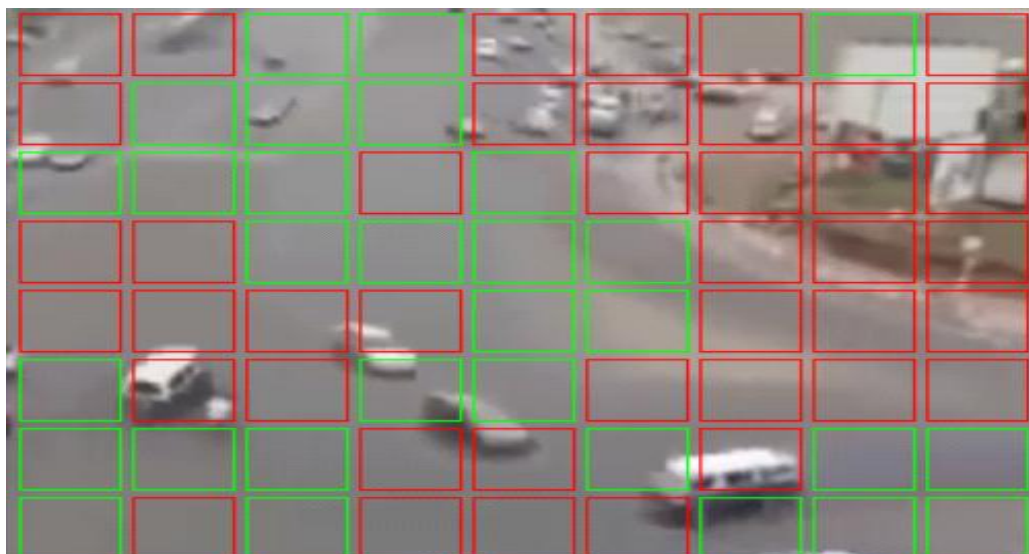


Figure 10: High Traffic
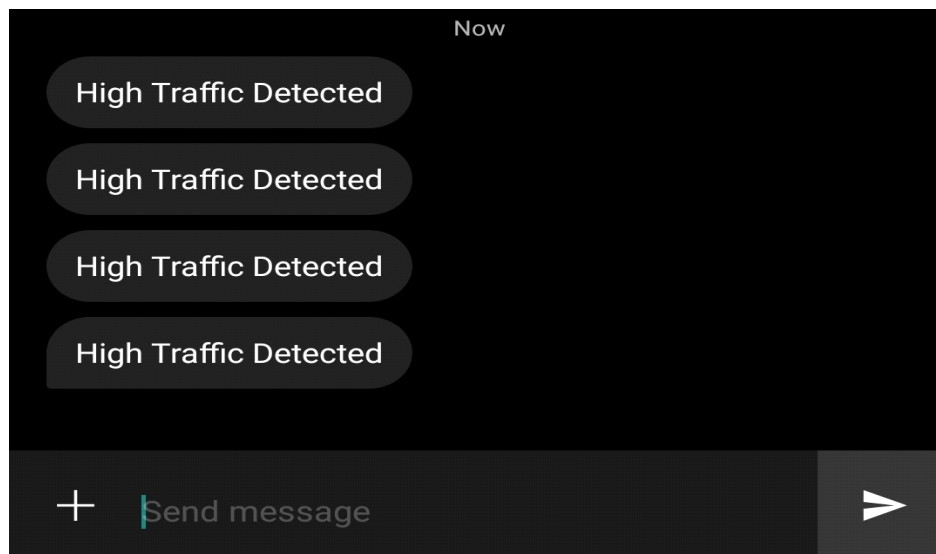
Impact Factor: 6.252



Figure 11: Sent Message

If the Red Rectangle Box indicate high Traffic then display and sent the message to the controller Because the chances of occuring high traffic is low.

## IV. CONCLUSION

In this proposed technique various algorithms are use for the evaluates of traffic density. The system needs the cameras installed in the interaction to predict the traffic density and support vector machine gives the best results. By including different algorithms such as Histogram of gradient, Local Binary Pattern and Support Vector Machine helped in evaluates the traffic density accurately.

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