UNIVERSITY INSTITUTE OF ENGINEERING AND TECHNOLOGY, KURUKSHETRA UNIVERSITY

Session (2019-2023)

Project Synopsis

On

Smart Traffic Lights

SUBMITTED TO:

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Problem Description

One of the primary causes of traffic congestion, especially at intersections, is that the traffic lights have not shown the right time according to the existing traffic conditions. Time settings based on peak/off-peak traffic lights are not enough to handle unexpected situations. As per the recent statistics by NGSIM data, we found that traffic congestion typically leads to an increase in fuel consumption of the order of 80%, and the traveling time has increased by a factor of up to 4. According to a report published by the Times of India, about 146,133 people were killed in road accidents in India in 2016. Unfortunately, about 30% of deaths are caused due to delayed ambulances. Another Indian government data shows more than 50% of heart attack cases reach the hospital late, which can constitute the unavailability of ambulances. Still, a majority of it is due to patients stuck in traffic. More than just infrastructure expansion and building new roads are required to address the traffic issues. Traffic light, as part of the traffic control infrastructure, needs to predict the timing of red, yellow, and green periods based on the current situation; some studies have been conducted to make traffic lights smart. With the help of sensors and cameras and the implementation of various technologies, such as artificial intelligence and image processing, the traffic light controller can make time-setting decisions based on real-time data. To cope with the prevailing traffic scenarios and meet the ever-increasing demand for traffic, the urban transportation system needs effective solution methodologies.

TECHNOLOGIES AND LIBRARIES USED

Technology:

1. Python
2. Python Turtle Graphics

Libraries:

1. OpenCV
2. numpy
3. os
4. random
5. math
6. time
7. turtle