

TrafficSense

SMART ADJUSTMENT OF TRAFFIC LIGHT TIMINGS



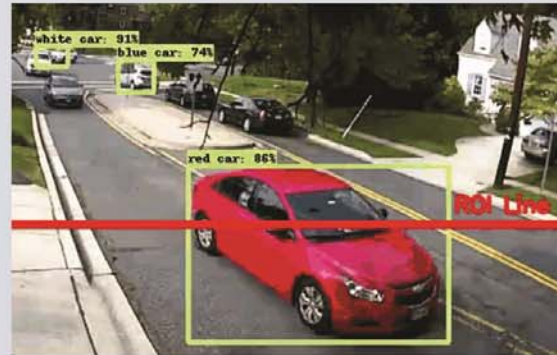
Anglo-Chinese School
(Independent)
A Methodist Institution
(Founded 1888)

Problem Statement

Inefficient traffic light timings cause frequent traffic congestion outside schools in the morning and after dismissal. This greatly increases waiting time and may even force students to wake up earlier to avoid the jam.

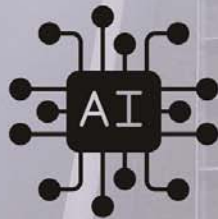
Our Solution

- Combination of Arduino for hardware and TensorFlow API for software
- OV7670 camera module takes a picture every 20 seconds
- Image is analyzed by the program which detects the number of vehicles present
- Total number of vehicles is added up every 30 minutes and compared with other times of the day
- Results across one month are tabulated and peak hours for the location can be found
- Random spikes in vehicle count are detected as anomalies (e.g. vehicle breakdowns) and are removed from the data set
- Traffic light timings will then be adjusted according to the vehicle frequency on the different days of the week at each hour



Reflection

We have tested our solution on some pre-set images and found that it has proven effective around 65% of the time. This accuracy is slightly low as the current camera has a lower resolution which decreases its accuracy. Additionally, our single-camera setup may miss vehicles when they are layered behind each other, impacting data accuracy. To improve this, we plan to deploy a network of cameras capturing various angles of the road. Additionally, we'll develop a program to integrate repeated data points into our main dataset. We learnt the significance of travel in our daily lives, and how a large portion of time could be saved by reducing the number of jams on the road.



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