INEFFICIENCY IN WAIT TIME TRAFFIC CONTROL SYSTEM

Optimization Algorithm

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INTRODUCTION

With the increasing number of immigrants to the United Kingdom either for education, work, or even as dependents, which has recently been reported as an all-time high, many infrastructures will be stretched. One such infrastructure that will be affected is the road traffic system.

Efficient traffic flow is a major concern in most developed cities across the world including the United Kingdom because it determines 'the when' of things. Efficiency is a measure of deliverables per time, and it will in turn affect every other area of people's life. Time is valued as money and when time is delayed cost increases. The major Traffic flow problem is delays and the current traffic control systems do not prioritize the road users.

Recent observation shows that.

i. At pick periods when the populace is going to work or when children are going to school in the morning and when they are returning in the evening, traffic is delayed, which could result in other problems like missing appointments, delay in handling emergencies, etc.
ii. Driving through the city at night shows another form of delay that is caused by the mode of operation of the current traffic system.

With the current Traffic control systems, it might become impossible to optimize the traffic flow of overly populated cities soon; this is because the amount of road users will continue to increase, and the traffic control system must improve to meet the needs of the growing population.

EXISTING TRAFFIC SYSTEM: ALLOCATED WAIT TIME SYSTEM

The existing traffic control system, which is however an effective system presently, may not be as effective and efficient as it currently is as the city continues to develop. The existing system is based on time count on a multi-directional road. Each direction is allocated a waiting time and when the time elapses, flow time is allocated, but this does not resolve issues of heavy traffic on time, especially the unnecessary delays experienced when driving at late night when the number of vehicles is reduced drastically and, in some cases, there is no vehicle from other direction.

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PROPOSED TRAFFIC SYSTEM

OPTIMISATION OF ROAD TRAFFIC SYSTEM USING QUEUE LENGTH PREDICTION

In this system, rather than using allocated wait time, queue length will be used to determine the signal by the traffic control system for road users to either wait or move. This can be achieved by using a history of visual records of specific roads to predict the flow rate, such that the data obtained can be used to train the new system to:

    i.   Identify the number of vehicles per length.

    ii.   Determine the optimum number of vehicles per queue.

    iii.   Determine road lanes that require more attention.

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