# A Signal Control for Oversaturated Networks

Ponlathep Lertworawanich

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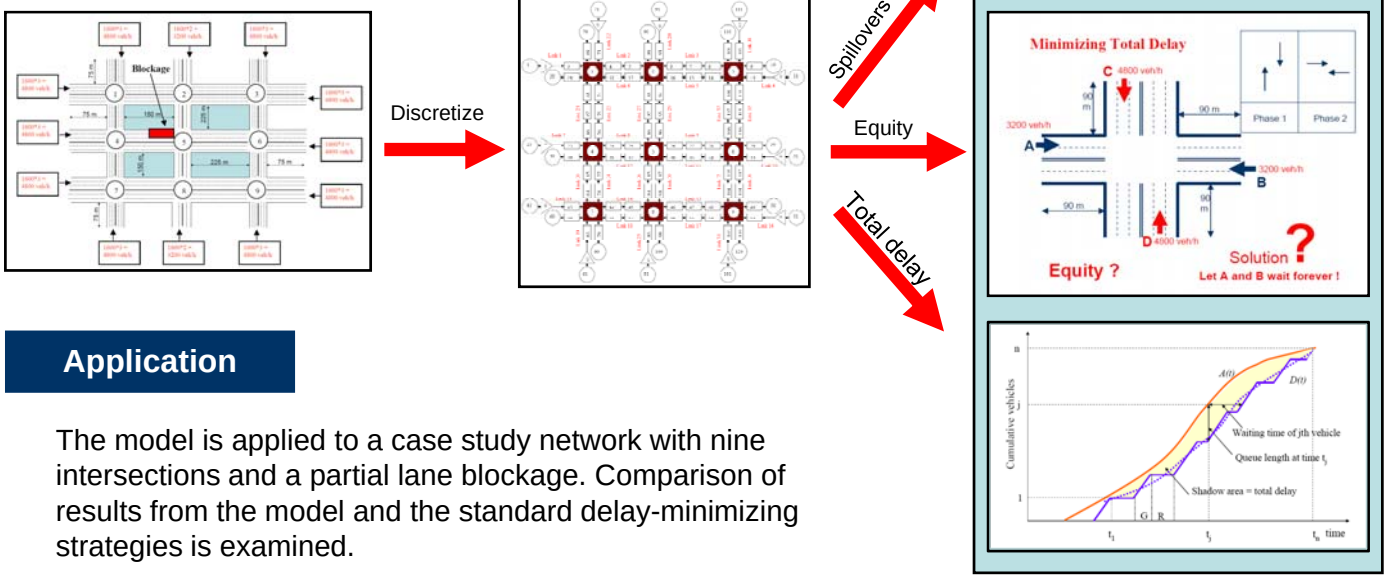
## Background

Increasing traffic congestion is a major source of road user expenses due to higher fuel consumption and time loss. Transportation agencies are questing for the most efficient approach to mitigate urban traffic congestion. In cities, traffic signals are the main devices for controlling traffic. Efficient signal controls lead to less congestion and smooth operations while poor signal controls could result in severe congestion or even a network gridlock. By properly coordinating the traffic signals in a network, platoons of vehicles can keep progressing. Signal coordination will enhance overall traffic operations.

## Purpose

This research aims at developing an effective signal control strategy using the horizontal-queue modeling for oversaturated networks by incorporating important facets of oversaturation:
1) Spillover avoidance,
2) Delay equity, and
3) Total delay minimization

## Method




## Application

The model is applied to a case study network with nine intersections and a partial lane blockage. Comparison of results from the model and the standard delay-minimizing strategies is examined.

## Conclusion

The model can efficiently manage oversaturated conditions by avoiding spillovers and intersection blocking as the first priority goal. The second goal is to balance delay equity among different approaches. The third goal is to minimize the total network delay. In future, this model can be extended to a dynamic control system or combined with evacuation route planning scheme.

## Contact

Ponlathep Lertworawanich, Visiting Researcher <ponlathep@psualum.com>