

Industrial Consultancy & Sponsored Research (IC&SR)

TRANSIT SIGNAL PRIORITY AT A MULTI-PHASE INTERSECTION

IITM Technology Available for Licensing

Problem Statement

- With the ongoing growth in the number of people commuting via private vehicles, the road infrastructure is experiencing a continuous increase in the volume of vehicles.
- **In order to fully harness the benefits of mass transit systems** and enhance their effectiveness, there is a need for the implementation of innovative operational techniques.

Key Features / Value Proposition

Technical Perspective

- ❑ This system and method are designed to **improve traffic management at intersections**, particularly by considering the impact on passenger delays caused by mass transit vehicles and private vehicles
- ❑ A set of minimum green and maximum red values for a red truncation and a green extension of a signalling device is determined, based on which a control signal may be generated for changing a configuration of the signalling device

User Perspective

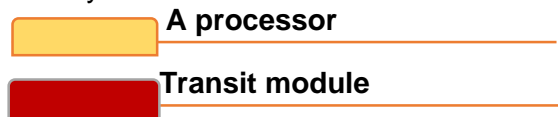
- ❑ The system aims to reduce total person delays by optimizing signal configurations
- ❑ It dynamically adjusts signal timings to enhance traffic flow and minimize passenger waiting times

Intellectual Property

- IITM IDF Ref. 2045
- IN202041050479

Technology

The system includes:



- ❑ Processor involves the non-transitory computer readable medium comprising computer readable instructions
- ❑ A traffic control system receives a transit request through the transit module coupled to the processor and an occupancy attribute from a mass transit vehicle, and estimate a measure of a first delay time.
- ❑ Further, the traffic control system may estimate a second delay time for private vehicles, and a total person delay may be determined and reduced at the intersection.
- ❑ **Transit Time Estimation:**
 - ❖ **First Transit Time:** This time includes a queue dissipation time and an approaching transit time associated with the first red light.
 - ❖ **Second Transit Time:** Similar to the first transit time, it includes a queue dissipation time and an approaching transit time but pertains to the second red light.

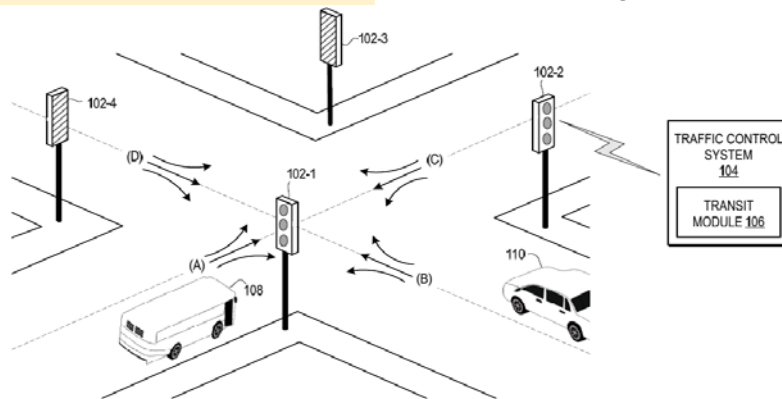


Fig. 1 illustrates an exemplary multi-phase intersection for implementing a traffic controlsystem and other components, as per an implementation of the present subject

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- Calculation of Green Extension and Red Truncation:** Based on the estimated transit times, the system determines values for green extension (GE1) and red truncation (RT2). These values will be used to modify the durations of red and green lights of a signaling
- Further, based on the total person delay, it generates control signals to change the configuration of signaling devices (e.g., traffic lights) at the intersection.

Technology Category/ Market

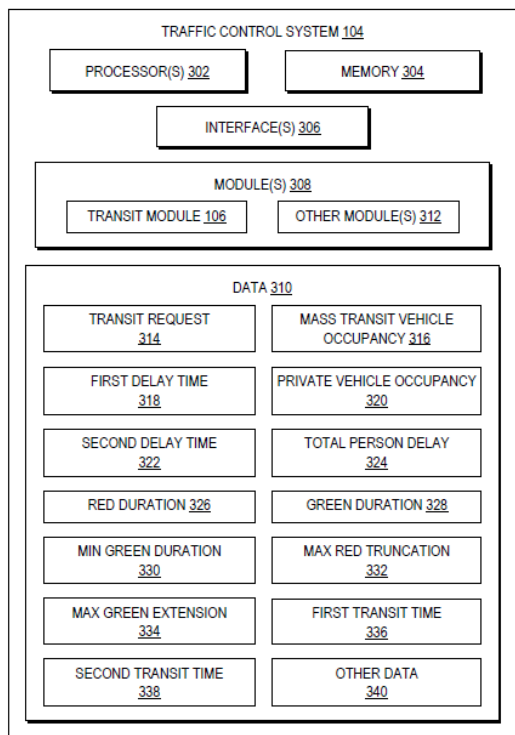
Category –Automotive

Applications – Transport systems, Automation, Automobiles, Traffic control systems

Industry –Automotive/ Automation

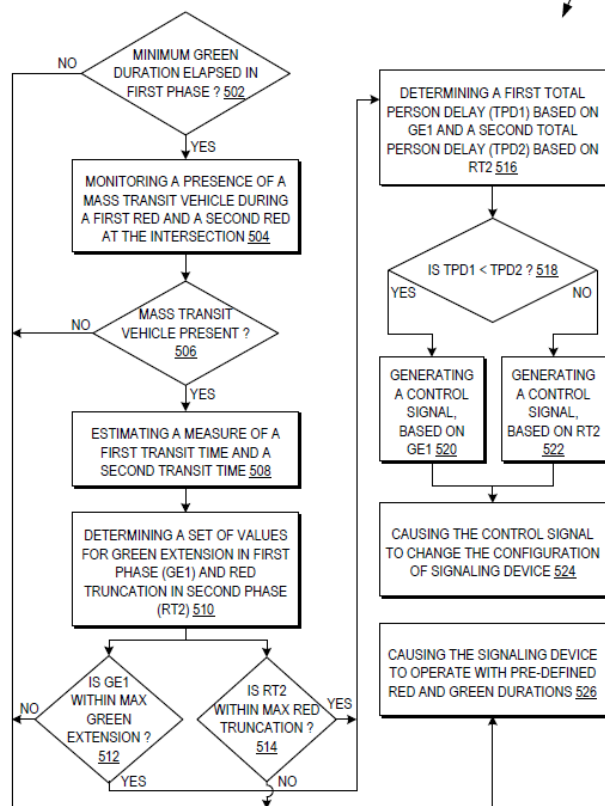
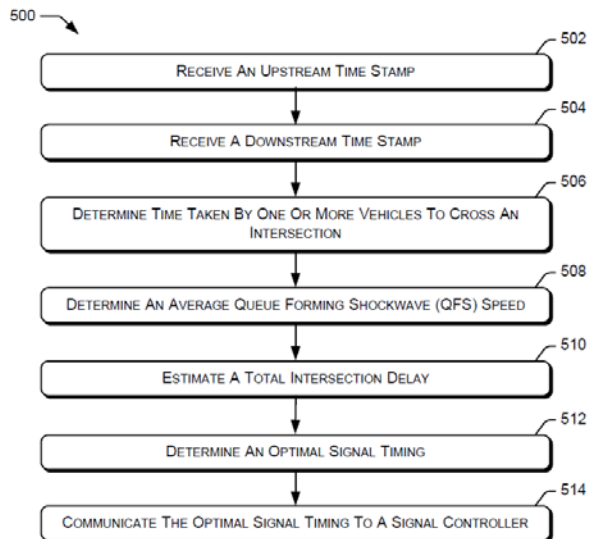
Market -The global intelligent transportation system market is projected to grow from \$22.91 billion in 2021 to \$42.80 billion in 2028, at a CAGR of 9.34%

Images



TRL (Technology Readiness Level)

TRL-7, Technology Validated in relevant Environment



Research Lab

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