IIT MADRAS
Indian Institute of Technology Madras

Technology Transfer Office
TTO – IPM Cell

Industrial Consultancy & Sponsored Research (IC&SR)

ESTIMATING TRAVEL-TIME

IITM Technology Available for Licensing

Problem Statement

- Obtaining accurate travel-time information for a transportation route is essential for various applications in transportation systems where travel-time is influenced by a complex interplay of multiple traffic variables that affect the route's capacity and demand within the transportation network.
- This estimation is crucial for tasks such as vehicle routing, urban planning, traffic management, and more.
- However, the challenge lies in acquiring reliable traffic data that corresponds to the relevant traffic variables to enable accurate estimation of planned travel-time for the given route.

Key Features / Value Proposition

Technical Perspective

- The invention discloses approaches for estimating travel-time for vehicles travelling across routes with heterogeneous traffic streams that involves a method and a server to execute the same
- The server assign a confidence score to the travel-time interval **based on error in the travel-time interval and modifies a model for determination of the travel-time interval.**

User Perspective

- The travel-time is determined using confidence intervals **based on statistical models** that **enhances the accuracy** of travel-time estimates.
- Vehicle information collected by the receiver module includes parameters like between the module and the vehicle, angle of **detection, lane, direction, depth, lateral distance, vehicle class, and space headway within the traffic stream**.
- Historical data provides information about past traffic conditions, which can be **used to improve travel-time estimation accuracy**

Technology

The present invention discloses ***a server for travel-time estimation capable of:***

Receiving Travel Information: received from a user device specifies a particular route for which travel time needs to be estimated.

Receiving Traffic Data: Server receives traffic data multiple receiver modules distributed along the route.

Classify and re-identify the vehicles: Based on the traffic data the vehicles are classified and re-identified

Determine a travel-time interval for the route: Using the traffic data and the travel information, the server calculates a travel-time interval for the specified route

Communicating the travel time: The server then communicates this calculated travel-time interval to the user device, which requested the travel-time estimation

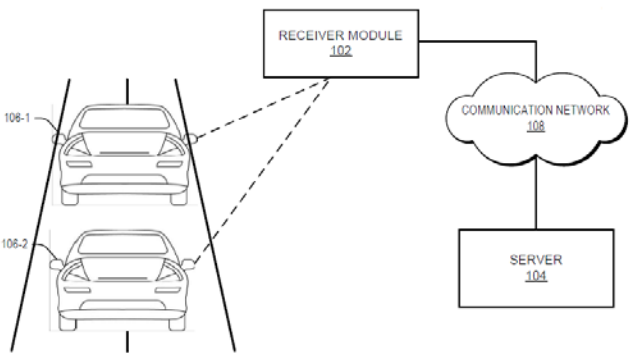

Fig. 1 illustrates an exemplary environment in which the system for travel-time estimation is implemented

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- The traffic data received from the server includes two types of information:
  - *identification information associated with computing devices in the traffic streams*
  - *vehicle information associated with the vehicles in those streams*
- The said receiver module comprises:
  - ✓ **a Wi-Fi Media Access Control Scanner (WMS)** for determining identification information associated with computing devices in the traffic stream; and
  - ✓ **a Light Detection and Ranging (LIDAR) system** for determining vehicle information associated with vehicles in the traffic stream.
- The travel time interval determined both an upper bound and a lower bound, providing a range of estimated travel times.
- The server further obtain historical data associated with the route, wherein the historical data indicates past traffic information for one of the route and a transportation network; and determine the travel-time interval for the route, based on the historical data, the travel information and the traffic data from the at least one receiver module.

Images

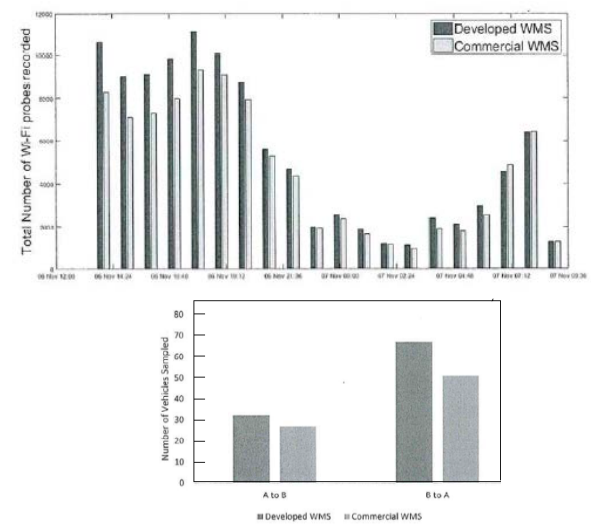

FIG. 2 provides illustrative graphs pertaining to output of the receiver module

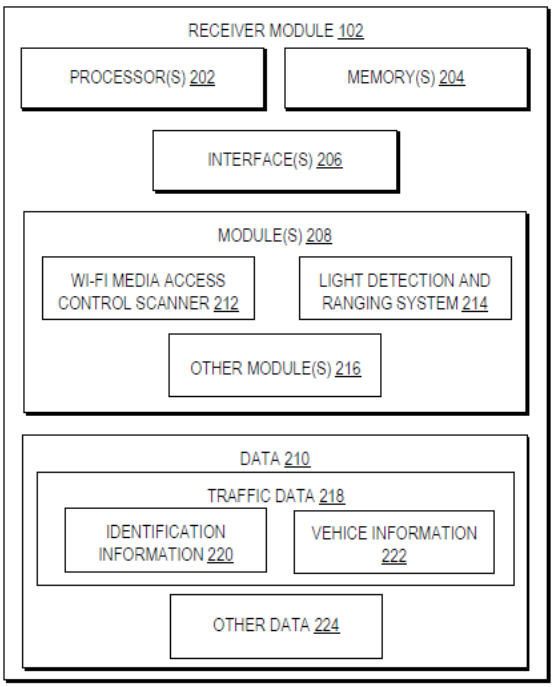

FIG. 3 illustrates a block diagram of a receiver module for determining traffic data

Technology Category/ Market

Category –Automotive
Applications – Transport systems, Automation, Automobiles
Industry –Automotive/ Transportation Systems
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%

Intellectual Property

- **IITM IDF Ref. 1935**
- **IN202041028930**

TRL (Technology Readiness Level)

TRL- 4-5,Technology validated in relevant environment

Research Lab

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