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CALTRANS DIVISION OF RESEARCH, INNOVATION AND SYSTEM INFORMATION
TRANSFORMING IDEAS INTO SOLUTIONS

Research Notes

Truck Parking Detection Technology Evaluation for I-10 TPAS in California (Truck Parking Availability System)

Install and evaluate a number of truck parking availability systems at the Wildwood safety roadside rest area (SRRA) located along I-10 in Riverside, California.

Traffic Operations

NOVEMBER 2024

Project Title:
Truck Parking Detection Technology Evaluation for I-10 TPAS in California (Truck Parking Availability System)

Task Number: 3635

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WHAT IS THE NEED?

Nationally, the lack of safe and legal truck parking spaces has been a problem for decades and has gotten progressively worse over the last 30 to 40 years. American Transportation Research Institute (ATRI) surveys the American Trucking Association's truck drivers and fleet operator members to help develop their research priorities. Over the last ten years truck parking made the top 10 list of issues of most concern to truck drivers and the last two years truck parking was the number 1 issue.

When truck drivers cannot find authorized locations to park, they will park wherever they can. These locations include in or near residential areas, on freeway ramps and shoulders, frontage roads and empty lots. Safety impacts, congestion, wear and tear on public highways, and clean up comprise some of the problems.

California is in the middle of a statewide truck parking study looking at many aspects of the issues that arise when trucks park in unauthorized locations. Preliminary results from the study show that:

- Almost every day in California a truck parked in an unauthorized location is struck by another vehicle. About two of those collisions per month result in a fatality.
- On an average day, nearly 15,000 trucks park in undesignated locations, most do this either because designated facilities do not exist, or the facility has reached parking capacity and have no more available parking spaces.
- Approximately 40% of unauthorized truck parking occurs in communities that are designated as the most disadvantaged.

Caltrans

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WHAT ARE WE DOING?

This project aims to evaluate available truck parking detection technologies from candidate vendors. The main metrics in this evaluation process include the accuracy of the truck detection technology; the cost of installing, operating, and maintaining the technology; the durability of sensors; and the reliability of the real-time parking data stream.

The research team will review the candidate truck parking detection technologies from literature and other published contents, collect and analyze parking detection system data from vendors during the test, and evaluate the accuracy and reliability of truck parking detection technologies. Additionally, a website for real-time truck parking availability information will be developed and maintained.

WHAT IS OUR GOAL?

This project aims to evaluate the number of truck parking space availability detection technologies to determine their accuracy, reliability, and other factors to understand how well each system functions. Then, the research team will use the results of the evaluation as part of the process to recommend to Caltrans what sensing system will be deployed at six public rest area along the I-10 in San Bernardino and Riverside California.

WHAT IS THE BENEFIT?

In the short-term, the evaluation will identify the overall best performing sensor system or systems with the best life-cycle cost and is the easiest to operate and maintain. These factors will help Caltrans to determine which system will be deployed at the six rest areas.

In the intermediate term, the project will provide baseline information and a template for future testing and deployments as Caltrans begins the buildout of a statewide truck parking availability information system. This system will provide truck drivers and fleet managers accurate information about available parking locations. At the same time the TPAS systems will collect rest area usage information which will help plan for the future development and construction of additional parking spaces either through expansion of existing facilities or the construction of new facilities.

Long-term, the goal is to collect Rest Area usage data to 1) identify how many truck parking spaces are needed in a given region and 2) better manage the use of existing spaces by giving truck drivers and fleet manages accurate and timely information on available parking. This will lead to improved safety, highway and freight operation, and emission reductions.

WHAT IS THE PROGRESS TO DATE?

In the last work period, the research team reviewed the truck parking detection technologies, developed the evaluation methodology and criteria, and updated the literature review report. The research team also started preparation work on data collection task.

In the next period, the research team will work on following tasks. The first task is to complete the literature review report. Second, the research team will collect and process parking detector data from vendors and ground-truth data during the test. A high-level summary of data collection and processing will be delivered. Third, the researchers will evaluate the truck parking detection technologies from vendors. Each delivery includes a series of reports.

IMAGES

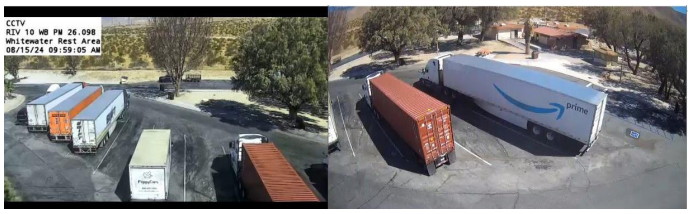

Image 1: A representative view of truck parking captured with cameras.

Image 2: Satellite view and map view of Whitewater Rest Area test location, west of Palm Springs on I-10 in Riverside County, California.