

Safety

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Project Title: Roadway Detector System Evaluation

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Next Generation C1 Loop Detector Reader

Develop an inexpensive tool to diagnose loop problems and collect accurate data for evaluating vehicle detection system.

WHAT IS THE NEED?

According to California Department of Transportation (Caltrans) Performance Measurement System (PeMS), the department-wide traffic database repository, approximately 30 percent of the data generated at the Caltrans' roadside traffic detection stations is questionable in accuracy and therefore unusable.

Due to the challenges of determining the causes for the inaccuracies, the problem has remained unsolved over the last decade, during which time considerable effort was spent with little improvement to the malfunctioning stations.

WHAT ARE WE DOING?

The objective of this project is to develop the ability to collect 100% of the real-time data flowing through Caltrans controller cabinets, validate this data, and make it available on the intranet for both existing and anticipated new Caltrans applications.

Freeway applications:

- The data can be aggregated and fed into Caltrans Performance Measuring System (PeMS) via Extensible Markup Language (XML). This raw data is two to three orders of magnitude more resolved than the data currently available in PeMS.
- Real-time detector diagnostics based on this high-resolution data developed by past research can tell if the detector, splice, or loop are going out of calibration.

Data Validation:

- Data is validated to the international American Society for Testing and Materials 2532 standards using VideoSync, which synchronizes the real time data with real time video.



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WHAT IS OUR GOAL?

The project's goal is to develop effective tools and techniques to diagnose and troubleshoot detection station malfunctions, thus allowing Caltrans to repair as many of the unreliable units as possible.

WHAT IS THE BENEFIT?

The C1 Loop Reader collects traffic data, which is used to evaluate new vehicle detection systems. This, in turn, enables Caltrans to select the most reliable vehicle detection system. A reliable and accurate vehicle detection system can direct traffic more efficiently and effectively, and ultimately improve traffic flow.

WHAT IS THE PROGRESS TO DATE?

Staff from Office of Transportation Technology Research has completed the project plan to develop the next generation C1 box prototype that supports WiFi, since current one (Rabbit microcontroller) is no longer in production. The results of the evaluation have been shared with District 4.

This research task will now be going through the close out process.