



Project Number

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Project Manager

John Zielinski

FDOT Planning Office

Principal Investigator

Amr Oloufa

University of Central Florida

Florida Department of Transportation Research

Automated Data Collection for Origin/Destination Studies of Freight Movement, Phase 2

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Current Situation

According to the federal Bureau of Transportation Statistics (2015), freight flows in Florida amount to over 700 billion tons a year, with a value over \$1 trillion. Trucks carry a large portion of this freight, logging millions of miles a day on Florida’s roadways. Considering the number of these vehicles and their economic importance to the state, understanding where these trucks are coming from and where they are going – origin-destination, or O-D, data – is vital for good planning. The collection of O-D data usually comes from surveys, visual counts, classifier counts, or other methods. These methods tend to be expensive and time consuming.

Research Objectives

In this project, University of Central Florida researchers demonstrated a novel method of automated real-time origin-destination data collection that is reliable, inexpensive, and portable.

Project Activities

The researchers’ experimental setup required a length of highway where cameras could be installed such that trucks’ license plates would be in view and three stations could be set up to get the maximum interpretation of origins and destinations. To create the needed detection units, the researchers identified and installed cameras and trigger systems and a solar power plant for each station. These installations had to meet cost and safety requirements that would demonstrate the feasibility of further deployment, if desired.

The researchers had initially planned to use triggering devices to detect trucks of a certain size and take snapshots of the rear license plate. This proved to be quite difficult due to speed fluctuations, truck length variation, and dirt and debris on rear license plates. By contrast, the front license plate was in a fixed location relative to the truck and usually clearly readable. The cameras used by the researchers were able to clearly record license plates both day and night. License plate images were processed by optical character recognition (OCR) software and stored with location and time information in a database. Pattern-matching techniques were used to correlate license plates and times to show when a truck entered and left the highway segment under study. The technology developed was modified to also calculate in real time the percentage of commercial vehicles relative to the overall traffic volume

Tracking results from the project proved to be highly accurate, agreeing within a few percent of historical data collected by the Florida Department of Transportation (FDOT). In addition, the detection units can operate at all hours and at low cost. Installation of the units requires minimal, if any, disruption of traffic.

Project Benefits

More accurate data about freight flows in Florida can support roadway planning that maintains the efficiency of roads for this valuable transportation sector.

For more information, please see www.fdot.gov/research/.



A row of semis is caught in heavy traffic on a Florida interstate.