Warning Systems Evaluation for Overhead Clearance Detection

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INTRODUCTION

The accurate detection and control of over-height vehicles is a need that arises in departments of transportation across the nation. Usually, this dimension is required to solve various transportation issues. In particular, numerous bridges in the state of Georgia have been affected by repetitive crashes of tall vehicles against their structural elements. As an example, a recent inspection report of the Houlihan Bridge over the Savannah River documents damages resulting from numerous hits by overheight vehicles. This case emphasizes the urgency of finding preventive measures.

To address this issue, a number of solutions will be investigated. The known methods of vehicle height detection are based on different approaches, employing various types of sensors. Each approach provides a specific mechanism for detecting and classifying vehicles based on their heights. Since user needs and desired classification results may differ, investigating existing detection techniques and systems with specific advantages is of great interest for Georgia Department of Transportation (GDOT).

NEEDS FROM SYSTEM

1) Detect vehicles that are on route to crash with a low clearance bridge.
2) Use single/multiple passive or active techniques to warn and attempt to stop overheight vehicles before collisions.
3) If a collision occurs, then have the system take a picture of the vehicle and their license plate for proper identification.
4) System should be powered by a self contained source.

OBJECTIVES OF THIS UNDERGRADUATE-RESEARCH PROJECT

1) Perform a world-wide search to identify adequate, cost effective systems that detect overheight vehicles and efficiently warn their drivers.
2) To classify, select and/or combine related devices and systems that will provide all parameters needed by GDOT, such as license plates, pictures, approaching speeds, effective warning, minimum costs and low maintenance.

METHOD AND STAGES

1) Comprehensive and detailed literature review to find as many options of detection systems as possible.
2) Communication with other state DOT offices to explore their preventative methods.
3) Communication with vendors of detection systems via email and phone calls to obtain needed information about their product.
4) Compile and compare data collected to determine and suggest the systems that will best satisfy GDOT’s needs.
5) Produce article for potential publication in a related magazine or transportation journal.

RESEARCH in PROGRESS

1) Near 40 pertinent systems from around the World have already been identified.
2) A summary, detailing the systems characteristics has been produced.
3) Communication with other state DOT offices (near 50 of them) has been initiated and is in progress.
4) Communication with vendors of detection systems via email and phone calls is in progress.

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