



NEVADA DEPARTMENT OF TRANSPORTATION RESEARCH DIVISION

COMPARISON AND EVALUATION OF ROADSIDE ANIMAL SENSING AND DRIVER WARNING SYSTEMS

Key · Points

Project Number:
399-20-803

Start Date:
November 16, 2020

Duration:
37 months

Project Cost:
\$299,600.00

Researcher:
University of Nevada,
Reno

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Investigator:**
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NDOT Champion:
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PROBLEM

Animals regularly enter and attempt to traverse roads, putting themselves and vehicle occupants in danger. This can cause drivers to collide with animals or change direction abruptly to try and avoid a collision, resulting in property damage and injury or death. In areas where fencing or crossing structures are not present or feasible, roadside animal detection systems (RADS) can alert drivers and sometimes the animals, to the presence of the other and reduce the risk of collision. There is an increasing array of technologies that detect animals in the roadside, classify animal type, map movement trajectory, and warn drivers. A comprehensive evaluation and comparison of currently available sensing-technologies for RADS is needed for the Nevada Department of Transportation (NDOT) and other states to select appropriate technologies and reduce animal-vehicle-collisions for driver safety and wildlife conservation.

OBJECTIVE

This project will be a research study to compare sensing technologies that can be used as roadside animal detection systems that are combined with rapid, edge-computing based data processing in connection with driver warning systems. The research team will provide the knowledge of what data can be extracted from each method under varying environmental and roadside conditions in Nevada, during all seasons and inclement weather, the comparable data accuracy and resolution among methods, the raw data, methods and technologies to warn drivers, and a final report of all test results to summarize the comparison procedure and the recommended optimal approach. Field testing will occur at a minimum of two sites in northwest Nevada with one study site at the USA Parkway Industrial Center.

METHODOLOGY

This project will be a comparative study in real-world field conditions to compare the ability of multiple sensor types (LiDAR, Thermal, Camera/Video, Radar) for rapid detection and correct classification of animals in varied roadside environments. This project will also develop a deployable combination of one or more sensor types alongside roadways with varying conditions, to determine the most cost-effective stand-alone or combination of sensors.

IMPLEMENTATION POTENTIAL

With the completion of this research, NDOT and other traffic agencies in the U.S. will obtain the knowledge and experience of deploying multiple types of roadside sensors for high-quality safety data, animal detection and driver warning systems, and new connected/autonomous traffic applications. These results

will determine the feasibility of a pilot deployment along roads in Nevada with safety concerns for collisions with animals where other mitigation measures are not feasible.

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