NEVADA DEPARTMENT OF TRANSPORTATION
RESEARCH DIVISION

PROOF-OF-CONCEPT RESEARCH OF ROADSIDE LiDAR SENSING MULTIMODAL TRAFFIC

Key · Points

Project Number:
744-18-803

Start Date:
February 11, 2019

Duration:
36 months

Project Cost:
$309,581

Researcher:
University of Nevada, Reno

Principal Investigator:
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NDOT Champions:
Rod Schilling
Traffic Operations
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Safety Engineering

PROBLEM
Existing data collection methods do not capture the level of detail and accuracy needed to accommodate newer traffic systems and applications, specifically multimodal all-traffic trajectories.

OBJECTIVE
Utilizing 360-degree light detection and ranging (LiDAR) sensors to attain proof-of-concept research to evaluate the accuracy, reliability and efficiency of the developed algorithms and roadside LiDAR sensing systems for various traffic scenarios and applications.

METHODOLOGY
Validate the feasibility of using roadside LiDAR sensors to provide high-accuracy, multimodal traffic trajectories by testing with different sensors, deployment methods, and traffic scenarios; and apply roadside LiDAR data to support connected and autonomous vehicles (CAVs), enhance traffic mobility/safety analysis, and integrate with existing traffic infrastructure for automatic pedestrian/wildlife warning.
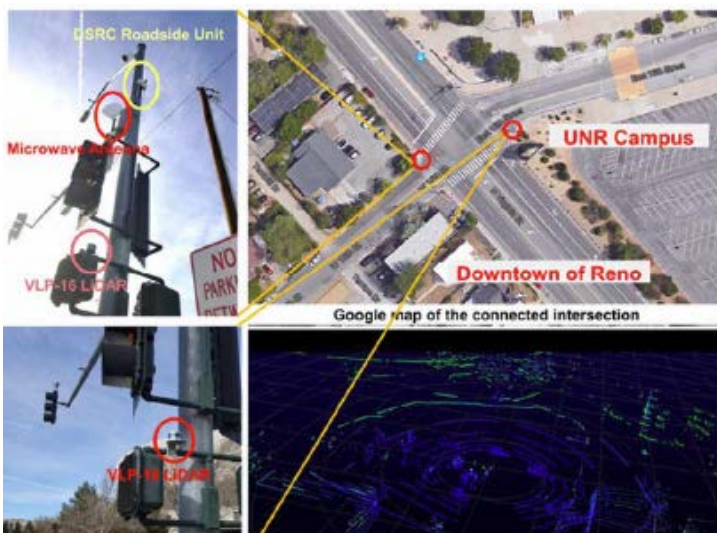

Figure 2. First pilot implementation of LiDAR-enhanced connected intersection in Reno, Nevada.

IMPLEMENTATION POTENTIAL
This project is at the First Application Field Pilot Stage and will provide proof-of-concept results for NDOT to understand the accuracy, reliability, and possible applications of roadside LiDAR sensing systems in various real-world scenarios. If the performance of the proposed technology is approved and accepted, NDOT can start to consider its application in wider and more diverse regions of Nevada. The systems, experience, and guidance developed in this project will directly guide the implementation of roadside LiDAR sensing systems. The next stage will be actual field implementation at prioritized intersections/corridors.