Semi-Annual Progress Report

TIDC Transportation Infrastructure Durability Center AT THE UNIVERSITY OF MAINE

Project Number and Title: 4.1 Highly Automated Vehicles and Bridge Infrastructure
Research Area: Thrust 4 Connectivity for Enhanced Asset and Performance Management
PI: *Jonathan Rubin, University of Maine*
Co-PI(s): *Kathryn Ballingall, University of Maine*
Reporting Period: *Jan 1, 2019 to April 1, 2019*
Date: *March 29, 2019*

Overview:

Provide overview and summary of activities performed during previous two months….

The project proposal was revised in November 2018 to incorporate feedback from project advisors at the Maine Department of Transportation (DOT). The project investigators met with staff from the DOT and Maine Bureau of Motor Vehicles in December 2018 to discuss the how their organization's needs can inform the project deliverables, as well as relevant data and initiatives. For example, the DOT is planning to purchase and install connected vehicle sensors (DSRC), and the BMV is creating an online permitting system for oversize and overweight vehicles and trucks. On-going communications with DOT staff will help us develop a concept of operations for a test application of a connected vehicle technology that will improve the durability and safety of bridges.

The project team is concurrently developing a review of the literature of recent connected vehicle applications and policies. This review is well underway and will help define a system's engineering approach for the development of connected vehicle technologies in this project.

Provide context as to how these activities are helping achieve the overarching goal of the project…

Collaboration with Maine DOT staff is vital to properly identifying the project concept and the needs of stakeholders. They will also help identify the most useful applications of connected vehicle technologies, and the data and infrastructure required to implement these applications.

Describe any accomplishments achieved under the project goals…

We have identified several applications for connected and autonomous vehicles, such as bridge collision avoidance, curve speed warning systems on highway ramps, road weather management systems and freight applications.

Describe any opportunities for training/professional development that have been provided…

The project team has hired a senior undergraduate student in economics and mathematics to support the literature review, and in particular the cost benefit analysis for the strategic investment component of the project.

Describe any activities involving the dissemination of research results (be sure to include outputs, outcomes, and the ways in which the outcomes/outputs have had an impact during the reporting period)…

Not applicable at this stage in the project.

Encouraged to add figures that may be useful (especially for semi-annual reporting by the project manager and management team)…

Not applicable at this stage in the project.

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Participants and Collaborators:

List all individuals who have worked on the project.

- Jonathan Rubin
- Kathryn Ballingall
- Nicholas Alvarez

List all students who have participated in the project. (Include name, class standing, major, role in the research)

- Nicholas Alvarez, Double Major in Economics and Mathematics, assistant researcher

What organizations have been involved as partners on this project?

- MaineDOT
- Maine Bureau of Motor Vehicles

Have other collaborators or contacts been involved? If so, who and how?

- Preliminary discussion of research collaboration on cybersecurity with the University of Connecticut

Changes:

Discuss any actual or anticipated problems or delays and actions or plans to resolve them…

- Project tasks are proceeding well, and there are no anticipated problems.

Discuss and changes in approach and the reasons for the change…

- Project has not changed in approach since the revised proposal in November 2018.

Planned Activities:

Description of future activities over the coming months.

- Completion of literature review.
- Continue to discuss the development of a test of connected bridge technology with Maine DOT:
    - Focus on the development of a concept of operations and stakeholder needs.
    - Potential projects so far include a bridge hit warning system, curve speed warning systems at ramps, freight application, and using connected vehicles for road weather management systems.
- Possible purchase and testing of a DSRC sensor.