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## 2020 RESEARCH PROJECT STATEMENT

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### **Research Topic:**

A Method for Pavement Marking Inventory and Retroreflectivity Condition Assessment Using Mobile LiDAR [Research Funding \$200,000]

### **Problem Statement and Objectives**

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Pavement markings are a vital transportation asset which facilitates safe and predictable driver behaviors. The effectiveness of pavement markings is dependent upon the condition, particularly during nighttime and/or adverse weather, and MassDOT is actively pursuing new and more durable marking materials. To improve marking performance at a national level, the Federal Highway Administration (FHWA) is proposing regulations to guide minimum pavement marking retro-reflectivity levels. Regulatory compliance poses a challenge, as conventional methods of visual inspection are labor-intensive, and the results can be subjective.

Therefore, there is a need for MassDOT to develop and implement an effective, efficient inventory and condition assessment method for pavement markings. This study will utilize mobile LiDAR data, both currently held by MassDOT and to-be collected by the study, and develop an automated method for the extraction, classification, localization, and condition (retroreflectivity) assessment for pavement markings in the Commonwealth. The outcome of this study will include a complete, georeferenced pavement marking inventory with retroreflectivity condition measurements for the selected corridors (i.e., the baseline inventory), and will also include the retroreflectivity deterioration trend on the selected corridors (i.e., the updated inventory with temporal changes). It is anticipated that five - 5-mile segments of interstate and non-interstate roadways (10 segments total) will be analyzed within the study.

### **Anticipated Outcomes and Deliverables**

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- The focus of this effort is to serve as a “proof of concept” for using LiDAR to locate and assess our pavement marking on an initial select group of roadways.
- This study will generate a complete pavement marking inventory and condition assessment for the subject roadways.
- The study will also establish an essential data layer to support MassDOT’s decisions on connected and autonomous vehicles (CAV) testing, implementation, and operation. This essential data layer will first be populated with the inventory and condition information for the subject roadways.