

Research in Progress

Improving Pedestrian Infrastructure Inventory in Massachusetts using Mobile LiDAR

Research Need

The purpose of this study is to utilize the mobile light detection and ranging (LiDAR) technology to determine the time-efficiencies and cost savings for collecting and processing MassDOT's sidewalk inventory.

Goals/Objectives

This research project seeks to demonstrate the feasibility of mobile light detection and ranging (LiDAR) as a tool to support efficient inventory update and condition assessment of pedestrian infrastructure at MassDOT. Focusing on the State Route 9 corridor, the objective of this research project is to:

1. Collect and process data with a mobile-LiDAR system.
2. Verify and update the existing MassDOT sidewalk inventory data
3. Use the LiDAR data processing for MassDOT's pedestrian infrastructure inventory/update.
4. Utilize the LiDAR data processing for MassDOT's pedestrian infrastructure condition extraction
5. Incorporate the pedestrian infrastructure condition information into the inventory geodatabase.

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Project Information

This project is being conducted as part of the Massachusetts Department of Transportation (MassDOT) Research Program with funding from Federal Highway Administration (FHWA) State Planning and Research (SPR) funds.

Principal Investigators:

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Performing Organizations:

University of Massachusetts Amherst

Project Champion:

John Moran, MassDOT

Project Start Date:

November 2018

Expected Project Completion Date:

July 2019

Methodology

This research develops an efficient and effective pedestrian infrastructure inventory method that consists of three key steps: 1) an automated LiDAR point cloud segmentation based on PointNet++; 2) an automated sidewalk and curb ramp extraction based on the scanning patterns of the LiDAR point cloud over the infrastructures; and 3) an automated sidewalk and curb ramp condition assessment based the geometrical characteristics of the pedestrian infrastructures.

