EXTRACTING URBAN STREET FEATURES USING STREET LEVEL LIDAR DATA FOR CONNECTED VEHICLE APPLICATIONS

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Street Level LiDAR Data

- DDOT started project in summer to extract locations of pavements markings
- The intent of the project is to help in generation of MAP message
- The project was later expanded to identify traffic assets
Street Level LiDAR Data

- DDOT Collected street level LiDAR data for over 300 miles.
- Street Level data provides rich 6 attribute data compared to traditional
- Apart from (x,y,z) data contains (R,G,B) values of each point
Street Level LiDAR Data
Street Level LiDAR Data

- Extracting ground level images at each intersection
Street Level LiDAR Data

- LiDAR points plotted at a intersection
Street Level LiDAR Data

- Clustered LiDAR points at the intersection
Image Recognition

Images generated from clustered points
Image Recognition

- Images are generated using above clustered points

- Neural network is trained to recognize which images are pavement markings vs curb images
Street Level LiDAR Data

• The extracted data is used to train Neural network model to classify pictures

• We had a success rate of 72%

• The results are plotted on the google maps
Street Level LiDAR Data

Detected pavement marking on 16th St and Church St NW
Street Level LiDAR Data

Detected pavement marking on 16th and Corcoran St NW
Street Level LiDAR Data

Detected pavement marking on 16th St and Church St NW
Traffic Asset Recognition

- The work is extended to recognize traffic assets

- Every object in LiDAR world is represented by a collection of points

- Once pattern is extracted, it is feasible to extract the objects
Traffic Asset Recognition

- View of Lidar data at 16 St and Q St NW
Traffic Asset Recognition

Traffic and Light assets extracted from the data
Future Work

• The work will be continued to convert data in to MAP message

• Asset recognition program will be enhanced to improve the accuracy and expanded on other corridors
• Questions ?