# Road Detection in Massive LIDAR Data

September 20, 2016

## 1 Objective:

From a given LIDAR data set for a geographic region, extracting the road network present in that region.

## 2 Goal:

The basic goal for our project is supervised machine learning. Initially we would be given a set of LIDAR data and the corresponding road network map for a particular region. We would try to identify certain points from the road netork map and locate the same in the LIDAR data set. After locating these points in the LIDAR data set we would analyse the data and try to extract various attributes related to the points located. We would also analyse LIDAR data where road is absent. Once the analysis is done we would train the system with various attributes of the LIDAR data for both absence and presence of road. Finally, using this learning we would predict the road network for a different region from the LIDAR data set of that particular geographic region.

## 3 Requisites:

- Study about LIDAR.
- Learn about LAS files, learn libLAS, compile and install libLAS.
- Study about Shapefiles as the map data would be shapefiles.
- Extract data from a LAS file and try to present it as an image file
- Study about point cloud library.

## 4 Issues present from the past work done:

1. LAS tools was used which is not open source, hence need to use libLAS.
2. Open street map was used. Here the data provided was only a vector which was the mid points only, hence the width of the road could not be determined.

# 5 Timeline and Plan:

| Task | Timeline |
|---|---|
| Extract data from LAS files. | 15 Sep to 15 Oct |
| Finish the initial stage of learning and required installations. Study about Point Cloud Library. | 01 Oct to 15 Oct |
| Supervised machine learning and training phase. Studying shapefiles and understanding them. | 15 Oct to 31 Oct |
| Create a program that would take a LAS file as an input and locate the road network present in that particular region.The output can be in the form of an image file showing the road network. | 01 Nov to 15 Dec |

# 6 Final Outcome:

Create a program that will take a LAS file of a particular region as an input and locate the road network present in that region. The output can also be presented as an image file which shows the road network present in that region.