

Master Thesis Defense Harsh Munshi

Date: Monday, 30.11.2020

Time: 10:30 AM

Room: Online

Title: PillarFPN: A Feature Pyramid Extension to PointPillars for 3D Object Detection.

Abstract:

In the field of autonomous robotics, sensors have played a major role in defining the scope of technology and to a great extent, limitations of it as well. This cycle of constant updates and hence technological advancement has given birth to industries which were once inconceivable. Industries like autonomous driving which has a serious impact on safety and security of people, also has an equal implication on the dynamics and economics of the market.

With sensors like LiDAR and RADAR delivering 3D measurements as point clouds, there is a necessity to process the raw measurements directly and many research groups are working on the same. A sizable research has gone in solving the task of object detection on 2D images. In this thesis we aim to develop a LiDAR based 3D object detection scheme. We combine the ideas of PointPillars and feature pyramid networks from 2D vision to propose Pillar-FPN. The proposed method directly takes 3D point clouds as input and outputs 3D bounding boxes.

Our pipeline consists of multiple variations of proposed Pillar-FPN at the feature fusion level that are described in the results section. We have trained our model on the KITTI train dataset and evaluated it on KITTI validation dataset.