

## ABSTRACT

Autonomous driving is an AI development technology (Artificial Intelligence) equipped with a sensor camera called LiDAR (Light Detection and Ranging). LiDAR is the retrieval of objects from the point cloud in 3D (3 Dimensions). However, the detection of 3D objects on autonomous driving still has problems such as the accuracy of object detection on pedestrians still lacking and the computation time is quite long. Complex You Only Look Once version 3 Tiny and Complex You Only Look Once version 4 Tiny are solutions to overcome the detection of 3D objects accurately and computational time not long enough.

In this final project, the method of changing the momentum value is carried out to improve object detection performance in autonomous driving. Input data that used in the form of velodyne obtained from KITTI (Karlsruhe Institute of Technology and Toyota Technological Institute) Benchmark. Output result on This Final Project is in the form of a model that already has a bounding box in each object with the results of its performance accuracy.

The analysis carried out in this Final Project focuses on the value of momentum 0.1, 0.5, 0.9 and 1.0. The best performing model is found in Complex-YOLOv4-Tiny with 0.1 momentum which produces mAP value of 75.3%.

**Key Word** : Autonomous driving, Complex-YOLOv3-Tiny, Complex-YOLOv4-Tiny, LiDAR, momentum