1. INTRODUCTION

Camera data and its camera-based algorithms are increasingly being used to make people, vehicles, objects and buildings visible for automated vehicles. With the help of these algorithms, the raw camera data can be evaluated regarding to various criteria. Important distinctions are the classification, dimensions, distance, alignment and the relative speed of the detected objects in relation to the ego-vehicle [1]. YOLO (You Only Look Once) is one of the most effective real-time object detection algorithms and offers all of these functions [2]. Due to the fact that new driving functions usually be validated on a proven ground under controlled conditions, environment simulation software such as CARLA is used in the early development processes [3]. CARLA is an open-source urban driving simulator for autonomous driving research and supports flexible sensor suit and full control of all static and dynamic actors and maps [4]. This offers the possibility to validate the camera data sets using different kind of camera-based algorithms for object detection or to train them quickly and easily. To evaluate the Ground-Truth Data of the simulation with the calculated algorithm objects, ROS (Robot Operating System) offers the possibility of sending the respective data streams using objects lists and evaluating them with a 3D visualization tool [5].

In this work, an autonomous driving environment model visualization based on an object list level is presented under use of an NCAP test scenario. An analysis is made based on the YOLO camera object detection algorithm compared to the reference data directly generated out of the environment simulation software model.

[1] Aeberhard Dissertation

[2] https://medium.com/@ODSC/overview-of-the-yolo-object-detection-algorithm-7b52a745d3e0, abgerufen am 08.06.2020

[3] Reway IEEE Paper Simulation-to-Reality Gap …

[4] https://carla.org/, abgerufen am 08.06.2020

[5] http://wiki.ros.org/de, abgerufen am 08.06.2020