MKT 4811 INTRODUCTİON TO ARTIFICAL INTELLIGENCE PROJECT PROPOSAL

INSTANCE SEGMENTATION IN DRIVING SCENES

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GROUP 7

1. Autonomous vehicles are cars that can navigate without the need for a driver by sensing the road, traffic flow and environment thanks to artificial intelligence systems. These tools are; It detects objects around it using technologies and techniques such as radar, lidar, GPS, odometry, computer vision. But Lidar vs. Due to the fact that the vehicles are very expensive, this situation is being tried to be solved with new technology and engineering solutions in this field. The subject we want to investigate with this project is the performance of instant segmentation operations with Mask R-CNN.
2. We will examine the studies related to our subject at undergraduate and graduate levels and the studies of companies in the field of autonomous vehicles and adapt them according to the scope of our own project.
3. We will use Mapillary Vistas Dataset. Mapillary empowers anyone to capture their own street-level imagery and understand places better with help of our computer vision technology. All Mapillary images can be used for exploring and extracting data from street-level imagery. Also In addition to this. There is another dataset CityScapes dataset, but the Mapillary dataset is closer to real-world application with a variety of weather, season, and time of day. Moreover, Mapillary has a much better labeling quality and is more fine-grained. So the general contour of the objects are preserved much better. This requires our model to be more robust to learn the fine-grained labeling and tolerate diversity.
4. We propose to using Mask R-CNN algorithm, also there are some other algorithm for image segmentation these are Faster R-CNN, CNN and DCNN. We make an investigation in the difference between these algorithm due to that We will use Mask R-CNN
5. One common performance evaluation method is that average precision (AP) over all possible classes under a certain IOU threshold. IoU is an evaluation metric used to measure the accuracy of an object detector on a particular dataset. We often see this evaluation metric used in object detection challenges such as the popular PASCAL VOC challenge. According to our research on Instance segmentation We intend to evaluate our model by using several different metrics in different categories, instead of using a single performance metric, in order to avoid biases that may occur during the evaluation phase of our model and to see the effects of these biases.