Am Donnerstag, 01.07.19, 10:30 hst berichtet Miray Yuce über das Ergebnis seiner Masterarbeit:

„Active Learning for Object Detection“

Abstract:
Recent success of deep learning approaches has caused a proliferation of deep object detection models. However, this success depends on large amounts of annotated data. Such data is easy to obtain, but expensive to annotate for object detection tasks since they require a human oracle to draw bounding boxes around objects in an image. To reduce labeling costs, active learning is a promising option compared to simpler methods such as random sampling.

Active learning is an iterative method which looks for the most useful small set of samples in a larger unlabeled set. The selected samples are annotated by an oracle and are included in the training set to be used by a new model. These useful samples have the potential to improve the model’s performance on unseen data, as if the model were trained on a whole labeled set.

As active learning has proven to be effective in image classification, it is still a less explored area for object detection. This is probably because object detection requires not only one class label per image, but multiple object localizations and classifications. In this master’s thesis, we propose an active learning algorithm for object detection, with two selection metrics and two selection strategies. Our goal was to answer this question: can we perform better than our baselines and improve the model’s performance by adding a small set of labeled data to the training set? We test our method on 2 object detection datasets and compare it to random and image similarity baselines. Results show that our method prioritizes under-represented object categories more than highly represented classes, and thus outperforms the baseline models.