

Abstract

Semantic segmentation on aerial imagery is a data-intensive task. Training segmentation model to detect road and lane markings in the aerial imagery requires a large amount of annotated data. Although there is wide accessibility for aerial images obtaining annotations for the same is an expensive task.

Using active learning methods for machine learning tasks limits the use of annotated data, but procuring the large amount of training data using the traditional active learning methods takes a long time. It can be a bottleneck for delivering customer-facing projects.

In this thesis, a framework is developed by combining content-based image retrieval and active learning methods to address the above issues. Additionally, an algorithm is realized in this thesis to improve the performance of the annotators and avoid the injection of noisy labels into the training data.

The thesis outperforms the baseline method by using the same or less number of annotated data with relatively fewer training iterations.

Keywords: Active Learning, Semantic Segmentation, Aerial Imagery, Image Retrieval System