

ABSTRACT

Intelligent Transportation System (ITS) combines a transportation system with Information and Communication Technology (ICT) system, where ICT system plays a role in adding functionality in the form of intelligence resembling human intelligence to the transportation system. The combination allows humans to know the real state of the transportation system including transportation components, such as the status of the road, objects around the vehicle, and the state of the vehicle, thus enabling humans to optimize the transportation system. For example, if there is a group of thief that using a van on the road, the process to detect where is the route that used by the thief can be faster by adding a vehicle detector on the traffic light camera. This detector will be work better if the detector can detect the van in real-time and in a high resolution image. This thesis will develop a detector system that can process a high resolution image but still maintain the inference time (fps) high using HRNet and FCOS. HRNet is a high resolution image network architecture that can process image in a multiple resolution (low, medium, high) to maintain the high resolution but still have an enough image feature to process, while FCOS is a one stage anchor-free detector, so it can detect the object faster than the anchor-based detector. Our experimental results shows that our system has a better result compared with the reference result using same dataset and hyperparameter. It also has a better result compared with the reference result that using the reference dataset and hyperparameter.

Keywords: ITS, Object Detection, Image Retrieval, computer vision, image processing, surveillance system