

Zheng Peng (zp2053) and Zihan Cheng (zc2237)

Chinmay Hegde

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Learning and Implementation of Jointly learns the Detector and Embedding model (JDE)

The multiple-object tracking (MOT) is a major problem in autonomous vehicles. Nowadays, most MOT tasks are separated into two step: 1) object detection and 2) object association, which are handled by two different models, for example, FasterR-CNN for detection and re-ID for association. But, the running time is so high that we cannot use them for a real-time system. What's left for us is to find a new model which can combine detection and identification into a single neural network. That may help reduce the running time and allow us to implement that into a car-computer.

Our group decide to use MOT-16 dataset to train the Jointly learns the Detector and Embedding model, JDE [1]. We are also going to learn some key components in it such as the network architecture, metric learning, the loss function and the optimization they used. And we also want to know some key index on MOT models evaluation. On top of that, we decides to embed it into a car computer while keep JDE working at at least 20 fps in real time. So that, JDE can be applied in any domain. In our case, we can apply JDE into autonomous vehicles.

References

[1] Zhongdao Wang, Liang Zheng, Yixuan Liu, and Shengjin Wang. Towards real-time multi-object tracking. arXiv preprint arXiv:1909.12605, 2(3):4, 2019.