

Road Damage Detection Using Deep Neural Networks with Images Captured Through a Smartphone

Transfer learning is the use of the knowledge gained while solving one problem and applying it to a different but related problem. In this paper, we developed a new large-scale dataset for road damage detection and classification. This dataset is composed of 9,053 road damage images captured with a smartphone installed in a car. Damage roads have been annotated in the form of a bounding box. For object detection methods based on CNN, there are four types of systems used for object detection, like **Faster R-CNN, YOLO, R-FCN, and SSD**. In all these object detection systems, a convolutional feature extractor as a base network is applied to the input image to obtain high-level features. Six features extractors are darknet-19, VGG-16, Resnet, Inception V2, Inception Resnet, MobileNet.

Here this paper has mentioned some object detection systems useful for work. YOLO had chosen for work. YOLO can predict the region and class of objects with a single CNN in bounding box shape. However, for segmentation, YOLO is not the correct system and can focus on R-CNN. Some features extractors can be used from this like VGG, Resnet; these are relatable for work.

References:

- [1] Maeda, H., Sekimoto, Y., Seto, T., Kashiya, T., & Omata, H. (2018). Road damage detection using deep neural networks with images captured through a smartphone. arXiv preprint arXiv:1801.09454.