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Image-based Fruit Recognition and Classification

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Automatically analysing images enables a range of applications in the field of agriculture, where many decisions are made based on the appearance of the product. There are significant benefits in the automation of these decisions. An important class of problems, which has seen significant attention in recent years is the analysis of agricultural images such as fruits and vegetables for recognition and classifications purposes. This paper proposes solution that uses Convolutional Neural Networks for classifying fruits as either healthy or damaged. The algorithm was built on YOLOv3, a state-of-the-art network for objects detection in images that runs on the Darknet architecture. The network was trained and evaluated on a newly collected and annotated dataset of over 400 images of 12 different fruits. The algorithm obtained a good classification accuracy of over 75%, considering the 12 double-state classes. We make the collected dataset available together with annotations indicating the type of fruit and the healthy or damaged state.

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