Using Computer Vision Models for Image Dataset Annotation

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Master's Thesis in Bioinformatics

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Outline

Abstract

This report is the product of a 30 ECTS master thesis at Aarhus university's bioinformatics and research center. The project was done in collaboration with Scio+, a local R&D department of a larger company, who supplied the data.

The aim of this project is to build an object detection model, that can generate annotations for another computer vision model. The model is trained, and meant to be used, on images from a chicken farm where the model is trained to detect a weigher placed among the chickens. The dataset used is comprised of infrared images of chicken pens taken from above along with annotations for the weigher.

To perform the object detection, three models were chosen: a contour detection model from OpenCV and two neural network (NN) models from YOLOv5. All the models were subjected to the same data and before conclusions the models are weighed against each other.

In the end, the contour detection model showed poor performance while the performance of the YOLO models impressed with little difference between the two models. Improvements for further analysis that might shed some light on the difference between the YOLO models are discussed before drawing final conclusions.