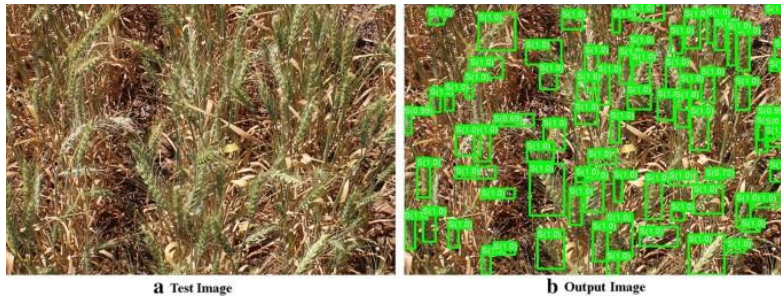


Topic/Title (Norwegian)

Automatisk deteksjon og analyse av hveteaks ved bruk av dronebilder og dyp læring sammenlignet med nærbilder fra robot

Topic/Title (English)

Automatic detection and analysis of wheat spikes using high resolution UAV images and deep learning in comparison with close-up images



Summary

Being able to detect and characterize wheat spikes from images has the potential to improve the selection of high yielding varieties in the wheat breeding pipeline. Along with the various technological developments (high resolution UAV cameras), the application of machine learning methods for image analysis has enhanced the potential for quantitative assessment of a multitude of crop traits including spike detection. This research study will be focusing on capturing UAV images of wheat spikes in the field and develop an object recognition method (mainly focused on deep learning) to detect and count the number of spikes. By doing this research besides learning about plant breeding and physiology, the master student will build competence in remote sensing and machine learning.

The research objectives are (1) determine the best flight altitude and parameters for head detection (2) develop a deep learning model to detect the wheat spikes from UAV imagery (3) comparing models for spike detection by UAV imagery and close-up imaging (4) investigate possibility of spike characterization based on UAV imagery.

Subject area (keywords): Spring wheat, spike detection, UAVs, machine learning, deep learning.

Language thesis: English

Bachelor or Master thesis: Master thesis

Credits: 60 ECTS

Project/company

PhenoCrop (NFR 320090) - Phenotyping for healthier and more productive wheat crops

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