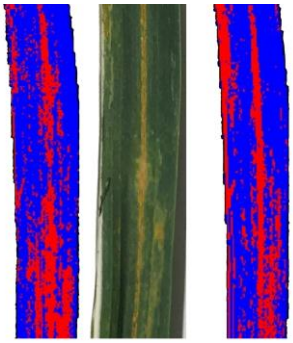
Bachelor or Master thesis BIOVIT 2021/22

Topic/Title (Norwegian)

Automatisert deteksjon og estimering av gulrustangrep basert på multispektrale dronebilder med høy oppløsning

Topic/Title (English)

Automated detection and estimation of yellow rust infection from high resolution multispectral UAV images



Summary

Yellow rust in spring wheat is a serious fungal disease, resulting in significant yield losses globally. Manual scoring of rust disease is costly, time consuming and prone to error due to the subjectivity of the observer. Recent advances in UAV multispectral imaging have potential to address this issue with low cost and high throughput. This research topic will be focusing on UAV image analysis for yellow rust detection using advanced machine learning techniques. By involving in this research topic, besides knowing plant pathology the master student will be able to learn remote sensing image capturing and analysis, with possibility of getting familiar with machine learning concept and applying it for this study purpose.

The research objectives are (1) to determine an appropriate flight protocol for UAV images for rust disease detection, (2) define an image index based on RGB and multispectral values for rust detection (3) determine the most applicable and stand out machine learning algorithm for yellow rust detection based on the information from images.

Subject area (keywords): Yellow rust, wheat, UAVs, machine learning

Language thesis: English

Bachelor or Master thesis: Master thesis

Credits: 60 ECTS

Project/company

HVETERUST (NFR 301835): Sustainable management of rust diseases in wheat

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