DRONE WORKFORCE SOLUTIONS (DWS) AGRICULTURAL AND FORESTRY DRONE COLLECTED IMAGERY CURRICULUM SYNOPSIS

15 hours over 3 weeks, 5 hours/week

Course Description

This course teaches a student in helping farmers and forestry professionals, through a cloud based system, to monitor and manage their crops throughout the entire growing season. By creating visualized, user-friendly, geo-referenced field maps, you will analyze and provide a full range of stats:

Stand Count

Determines the number of plants in a specific area and compares it to the expected results (per acre or hectare). Stand counts are particularly suitable for seasonal crops

Plant Population

Provides information about the number of plants and is ideal for perennial plantations and orchards

Plant Stress Analysis

Find out how healthy your crop is at key times during the growing season to intervene in a timely manner

Weed Analysis

Identify weeds in time to optimize pesticide usage and prevent crop damage

Pest Analysis

Pinpoint infested areas and apply pesticide only where and if needed

Plant Disease Analysis

Analyze crops at all growth stages to obtain valuable insights into a plant's current condition

Water Stress Analysis

Spot areas with potential water stress and standing water to adjust your irrigation system before it affects your crop's health

Flowering Estimator

Assess flowering levels to determine the exact growth stage of your plants to adjust pesticide usage, choose a proper harvesting date and other important crop management decisions

Eagle Eye

Create a visual overview of your field and mark points of interest, calculate the distance between different points, determine the size of different areas and many more plant counting, plant health tools and stress detectors that enable precise yield estimates and increases of overall profit.

This allows for immediate decisions that contribute to increasing productivity and a more efficient utilization of resources, with a significant reduction of production costs and risks.

Advantages of remote sensing and drone technology in crop monitoring

1. The class will start with a brief explanation about the advantages of drone and remote sensing technology in monitoring agricultural fields in relation to traditional methods

2. Students will learn what are the biggest challenges in agricultural production and how can precise information about crop condition help them optimize their production

Agremo software - technology, analyses, reports, benefits

1. Students will be introduced to the basics of the Agremo system, workflows and technologies behind it (AI, Machine Learning and Computer vision)

2. Agremo analyses can be divided into two analyses families: Plant counting and Plant health monitoring. In this class, students will learn about the capabilities of the Agremo system and the possibilities of these analyses and their applicability on different plant types.
3. Agremo offers nine different reports and students will learn how to read those reports and to choose the proper reports depending on the crop type and growth stage.
4. Students will learn how to grow their business by offering their services in the Ag niche and how farmers can benefit from Agremo reports.

How to make good quality maps of agricultural fields

In order to create a map of the agricultural field, the drone pilot needs to know how to create a flight plan and choose the right moment for flying. In this class, students will gain knowledge about the map requirements and learn:

1. Which drone and sensor can be used for mapping
2. Create a flight plan depending on the growth stage
3. Set proper altitude and overlapping
4. How to create a stitched map in GeoTIFF format
5. To choose the right time of the day for flying

Agremo Web App - workflow and features

In this class, students will be introduced to the Agremo Web App, its purpose, basic functionalities and learn:

1. How to create a field and upload a map
2. How to draw proper annotation for each analysis in order to get the most accurate results
3. How to move, copy/paste and draw multiple annotations
4. How to request for the analysis and enter all the necessary information about the analyzed plant
5. How to read the analysis results
6. How to use the App features (map and results sharing, compare results, expert comment, shapefile)

In-field Activities

For performing Agremo analysis there is certain information which should be gathered on the field.
Recommended set: Recommended sets refer to the number of plants planted per acre, hectare or square meter.
Ground truth images: Images of stressed plants taken from the ground with cellphone or camera

Practical knowledge

In this class, students should apply all the knowledge and skills they learned in the previous drone classes and go through the whole process from creating a flight plan and flying on the field to creating GeoTIFF map, uploading a map and requesting for the analysis.