

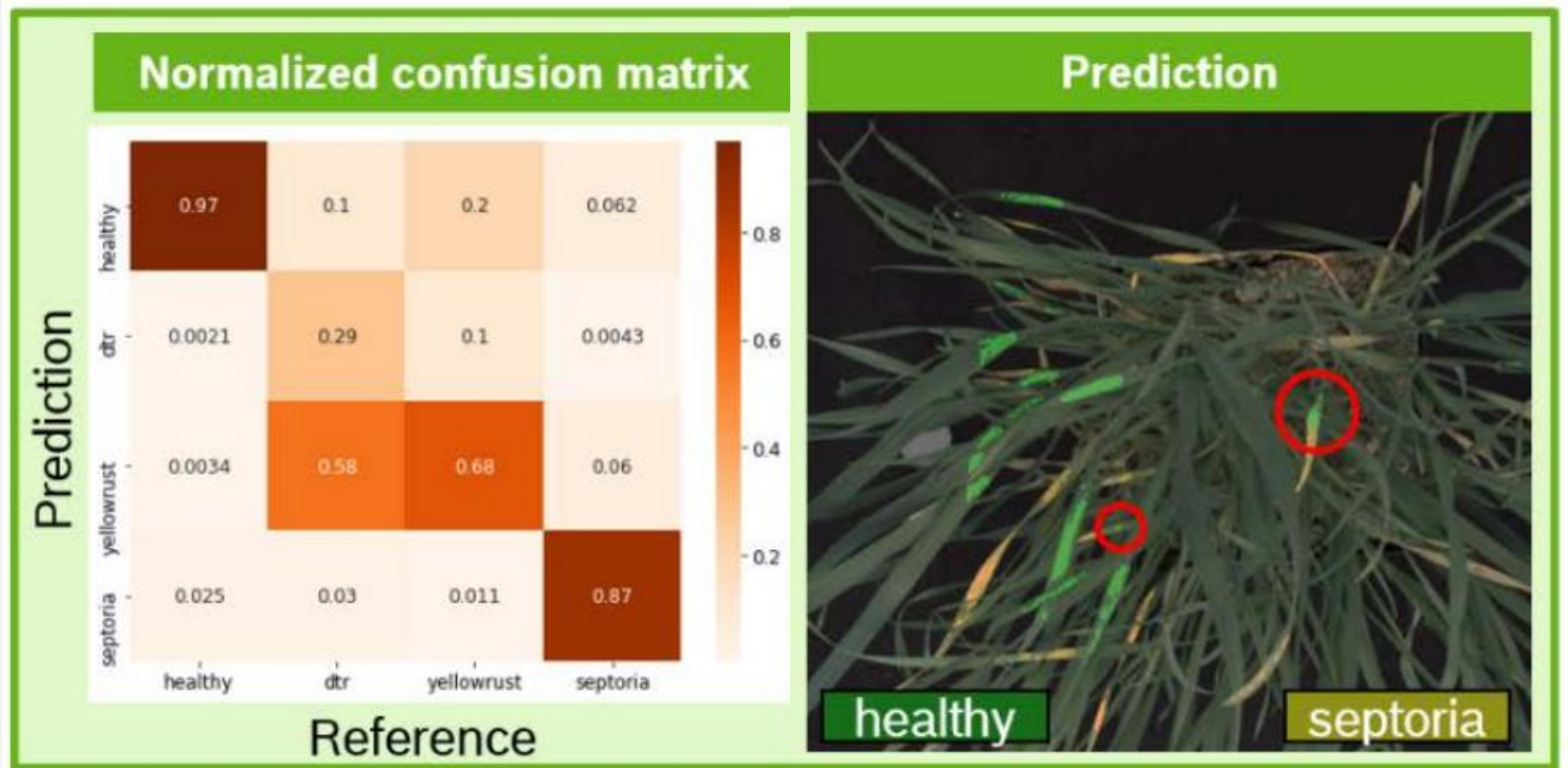


Hyperspectral Video Imaging for Precision Agriculture

Dr. René Heine

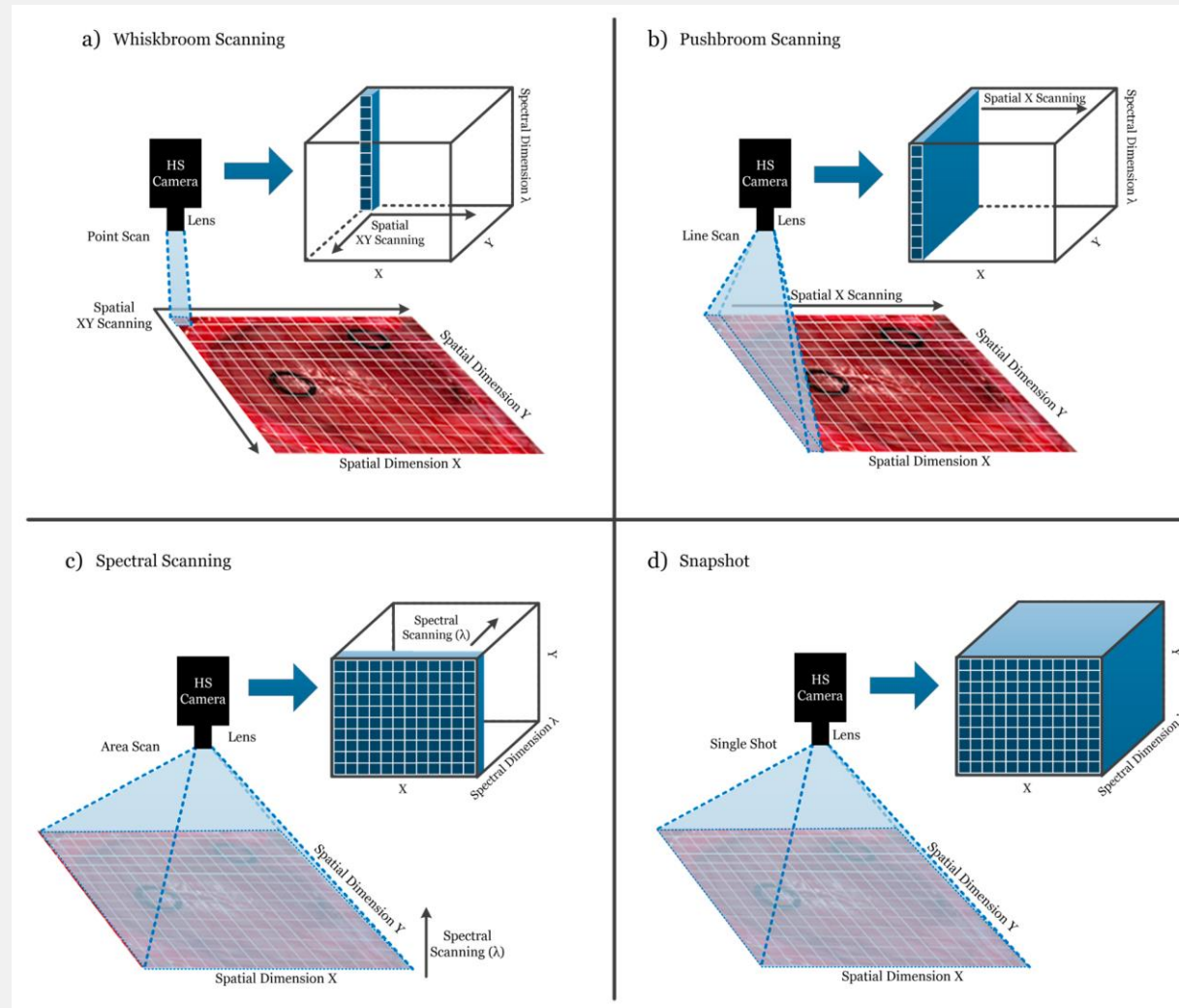
EPIC, 14. Sep. 2020

DIFFERENTIATION OF PLANT DISEASE



Detection of Plant disease with hyperspectral imaging enables a much better treatment of agriculture plantations with less usage of plant protection

HYPERSPECTRAL MAPPING



SOURCE: M. Halicek et al. "In-Vivo and Ex-Vivo Tissue Analysis through Hyperspectral Imaging Techniques: Revealing the Invisible Features of Cancer"

Snapshot Hyperspectral cameras deliver one image cube per sensor readout without the need of scanning.

**HYPERSPECTRAL
VIDEO CAMERA
ULTRIS S20 PLUS**



**ULTRIS S20 plus
Hyperspectral video
Camera**

- 400x400 Pixel
- 450-850nm
- 100 Channels
- 5 Mpix Pan Sensor
- UHD Sensor
- Up to 8 cubes/s

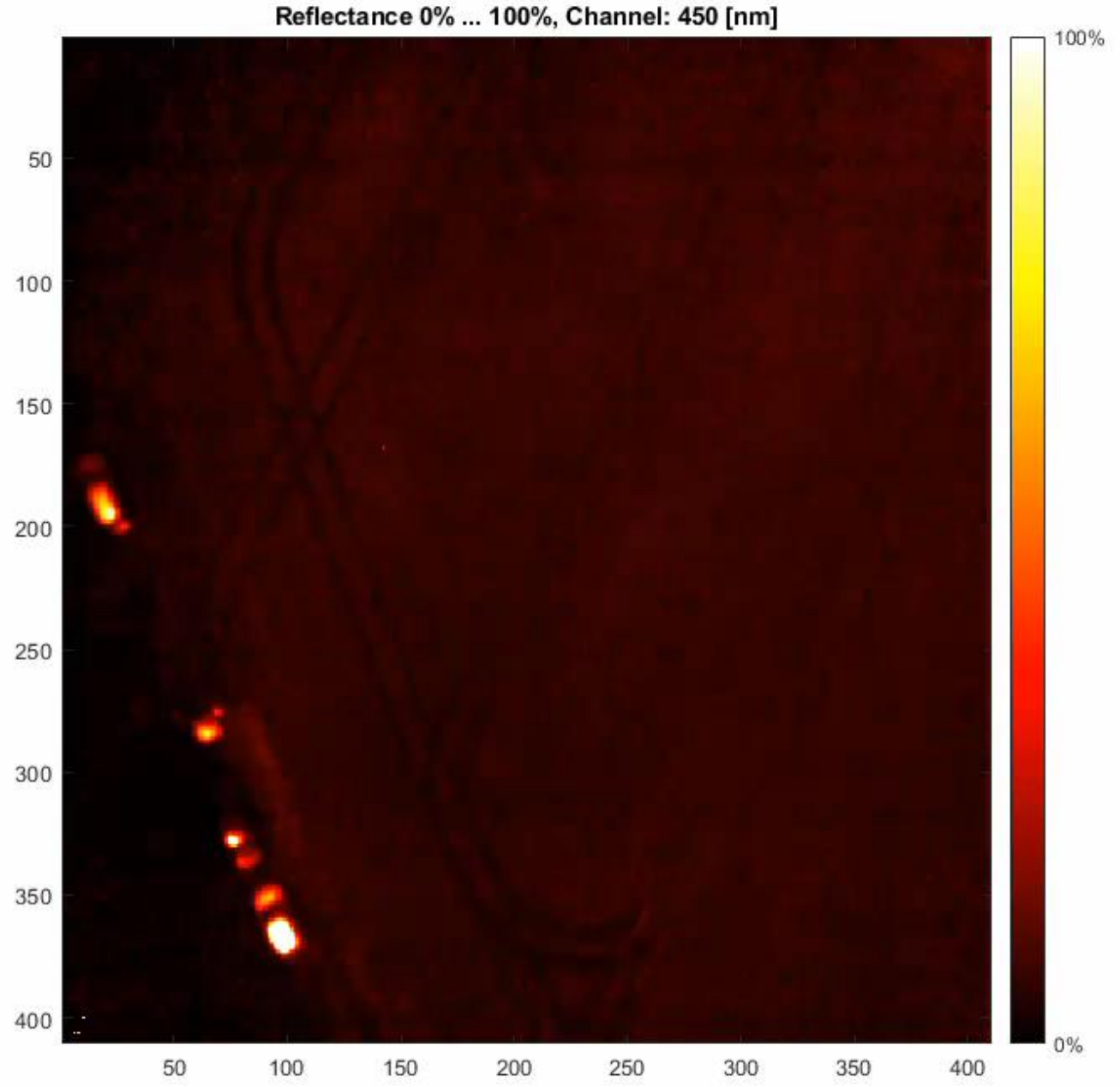
**HYPERSPECTRAL
VIDEO CAMERA
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**ULTRIS S20 plus
Hyperspectral video
Camera**

- 400x400 Pixel
- 450-850nm
- 100 Channels
- 5 Mpix Pan Sensor
- UHD Sensor
- Up to 8 cubes/s
- Full Drone Integration
- No IMU / GPS / GIMBAL needed

**HYPERSPECTRAL
VIDEO CAMERA
ULTRIS S20 PLUS**



All Channels recorded in 5ms; Sweep through Channels.

**HYPERSPECTRAL
VIDEO CAMERA
ULTRIS S20 PLUS**



PSEUDO RGB VIEW OF ULTRIS S20
(400x400 Pixel)



**HYPERSPECTRAL
VIDEO CAMERA
ULTRIS S20 PLUS**



PSEUDO RGB VIEW OF ULTRIS S20
(400x400 Pixel)



PSEUDO RGB VIEW OF ULTRIS S20 plus
(1800x1800 Pixel)



FLIGHT PLANNING



UgCS 3.6.225

Mission von 27.04.2020 15:06

Orte suchen

APM-1

Telemetrie: APM-1

Batterie	GPS	Telemetrie	RC Link
N/A	N/A	N/A	N/A
N/A	N/A	N/A	Zaun: N/A
Roh	Flughöhe, m	AMSL	Vertikalgeschwindigkeit, m/s
N/A	N/A	N/A	N/A

Befehle: APM-1

#1/1 Photogrammetrie Wer...

Breitengrad 48,3940083

Längengrad 9,8680013

#1/4 Entfernen

Fluggeschwindigkeit, m/s * 2,00

Turn-Typ * Gerade

Kamera Cubert_Ultri...

Bodenauflösung, GSD, cm * 5,50

Vorlaufüberlappung % * 80,00

Seitenüberschneidung, % * 70,00

Kameraoberseite zeigt nach v...

Winkelrichtung (0-360) 0,00

Hindernisse vermeiden *

Aktion ausführung * Jeder punkt

Zusätzliche Wegpunkte gener...

Überschwingen, m

Geschwindigkeit überschreite...

Höhenmodus * AGL

Lassen teilberechnung *

AGL Toleranz, m 3,00

Keine Aktionen im letzten Pun...

Doppelpass *

#1 Kameraeinstellung

Walze, °	Neigung, °	Yaw, A
0,00	90,00	0,00

Zoom-Ebene

#2 Yaw ändern

Yaw, A° 0,00

48° 23' 41,85" N
9° 51' 57,57" E
Steigung 600 m
Augenhöhe 740 m

Zeige Log

MAPPING OF BIG AREAS WITH ULTRA HIGH RESOLUTION



Distance (flight height)	0.5 m	1 m	5 m	10 m	50 m	100 m
GSD Spectral Sensor	0.09 cm	0.17 cm	0.85 cm	1.7 cm	8.5 cm	17 cm
GSD Pan Sensor	0.02 cm	0.04 cm	0.19 cm	0.4 cm	1.9 cm	3.7 cm
Image Coverage	0.35x0.35 m	0.7x0.7 m	3.5x3.5 m	7x7 m	35x35 m	70x70 m

Vielen Dank
für Ihre Aufmerksamkeit.

