chaLYNX

Computer vision system for recognising plants and their developmental physiology and phenotypic characteristics

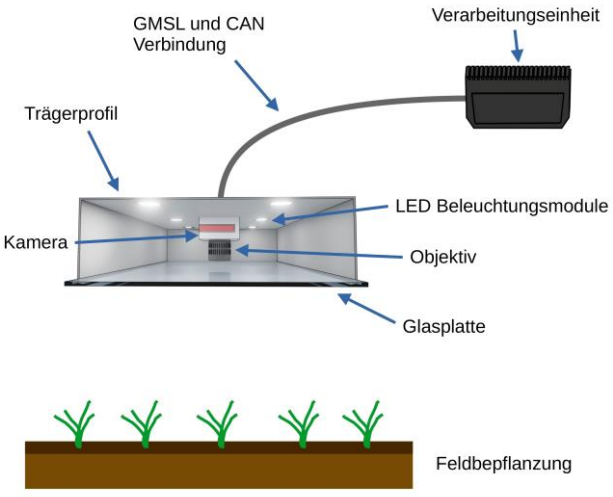
41.108.1.000– chaLYNX, 06.11.2023

Practical example: Detection of weeds and their growth centre

Summary

The computer vision system chaLYNX can be used in the agricultural sector for the intelligent detection of plants and their condition in real time in outdoor areas. It consists of a lighting unit, a camera module and a remote, high-performance processing unit. The remote processing unit can therefore be installed at a different location and is therefore ideally protected against harsh environmental influences or theft.

The chaLYNX system can be used to automate new processes in plant cultivation, such as selective plant protection or harvesting work. The processing unit of the chaLYNX system can be easily trained with new image data for the respective application and put to practical use in the shortest possible time.



Aufbau des chaLYNX-Systems

Description

The sensor system consists of a unit for shading the ambient light. Inside, there are LED light modules, which are mainly used to optimally expose plants for image capture under homogeneous conditions, regardless of the time of day.

Each sensor unit is equipped with the appropriate high-power LED light modules for the application, which illuminate the surface with an illuminance of at least 50,000 lux. The illuminance refers to a uniformly illuminated area of approx. one square metre, taking into account a distance between the surface and the light modules of approx. 80 cm. The light spectrum and colour temperature can be adjusted as required. Exposure is synchronised with the image capture, or only as soon as an image is captured. In addition, the individual lighting units can be addressed in segments directly by the processing unit via CAN. This allows the light intensity to be configured, for example.

The sensor system is installed in a protected housing with cooling and has an automatic lens cleaning system. Image data is transferred from the camera to the processing unit using the robust GMSL high-speed data transfer method. One processing unit can process the image data from up to two sensor systems.

Fields of application:

- Detection of the growth centre of a plant
- Disease and pest detection
- Recognising the fruit and assessing the size, degree of ripeness and potential harvest yield
- Segmentation of objects

Technical data

Item number	41.108.1.000
Sensor unit dimensions (LxWxH)	600x400x200mm
Protection class	IP67
Temperature range	0...70°C
Power supply (logic)	10...30V
Power consumption	depending on system configuration

Image system

Image sensor	1/2.6" global shutter RGB 2.3 MP 1920px x 1200px 60 FPS 1920px x 1080px 70 FPS 1280px x 720px 120 FPS
Lens thread	M12 x 0.5
Field of vision	Ca. 800mmx600mm
Dynamic range	71.4 dB
Maximum signal-to-noise ratio	38 dB
Brightness	~50,000 lx at ~1²m
Colour temperature	4000k (customisable on request)
Lighting frequency	Up to 1000Hz
TOPS	40 TOPS

Interfaces

Connections	CAN bus, Ethernet, power supply, 4 inputs / outputs (TBD)
Protocol / interfaces	Ethernet, CAN

Price / delivery options

Minimum purchase quantity	1 piece; 10 pieces with customised configuration | Price: on request
Delivery time	12–16 weeks depending on parts availability and stock levels
Scope of delivery	chaLYNX with connection cables and mounting accessories

Contact for further information

digital workbench gmbh
St. Gangolf-Str. 2
85139 Wettstetten
Germany

Josef Schmidt
E josef.schmidt@digital-workbench.de
T +49 841 98 18 99-00
M +49 151 156 317 51

digital workbench