green techlab

Dorothy MKI

Dorothy is a prototype that uses the principle of chlorophyll fluorescence to observe and log the growth process of plants. Four high power led stripes and a strobe controller are used to create a short light pulse that causes the plant to emit fluorescence. Dorothy uses a monochrome camera and a special filter to create an image with high contrast between the fluorescence on the plant and the background. Since the fluorescence is only a faint light, a PVC pipe was used to shield the camera from environmental light. This principle allows to take images on every background material. After some image processing steps the result is an image of a white plant in front of a black background that can be used to make different measurements e.g. diameter or surface size.



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Equipment

Dorothy is equipped with two LiPo-batteries and a small computer to keep it portable. The whole software for Dorothy was done in National Instruments LabVIEW. The computer offers enough processing power to run Windows 10 and LabVIEW with the necessary image processing toolkits on it.





Software

So far, the software is meant to observe the diameter of the plant in two different ways. To do that, Dorothy must be placed on top of a plant in a regular interval. Measurements and taken images are stored. The collected data can be used to draw growth curves of individual plants. See the picture below, 'Dorothy in action'.

- Mobile fotosynthese
 Plant Growth monitor for analytics
- Full Windows 10 PC
- Operation time 6 hours
- Plug and play (easy to use)



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