

MSc Thesis Project

Image Processing for drone based inspection of photovoltaic panels

Introduction: Drone based inspection – DronEI project

The aim of the DronEI project is to develop and bring to market an aerial drone based automated solution (DronEI) used for a full photovoltaic (PV) plant survey for more accurate survey in less time. The automatic drone-based inspection method combines Infrared, Electroluminescent and Photoluminescent imaging, and visible light imaging.

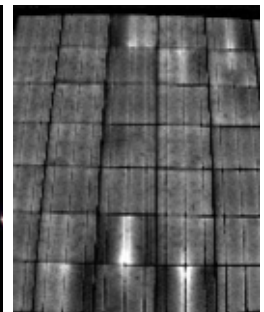
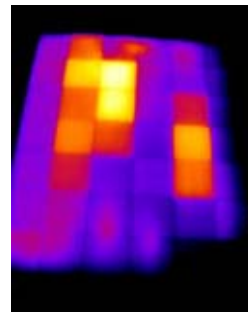
Contents: Up to three cameras (visible light, Short Wave InfraRed and Long Wave InfraRed) will be mounted on the drone. They will all acquire images of Photovoltaic panels that then need to be processed. The global aim of the DronEI project is to have images of a panel acquired from all cameras aligned and fused into one single image. This implies that all cameras should be calibrated jointly, that the panel present in images should be segmented from the background and then registered (aligned and put to the right scale) in a reference framework. Then both acquisition noise and motion blur should be removed before the images from different cameras can finally be fused into one.



The project will be tailored based on the student's interests among the previously listed topics.

The DronEI project brings together actors from the academic sector: Aalborg University and the [Department of Photonics Engineering](#) from Denmark Technical University and industrial partners: the drone manufacturer [Sky-Watch](#) and the PV plants inspector [Kenergy](#).

The project may be carried out in collaboration with the research project and Sky-Watch.



Prerequisites:

One of the courses 34240, 34241, or 34250 or knowledge in Image Processing. Knowledge of a development language (matlab, C/C++) is required (development could be done in Matlab or OpenCV for instance).

Additional information and references: Contact teachers

Practical details:

The project is intended for 1 or 2 students with 30 ECTS-points per student.

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