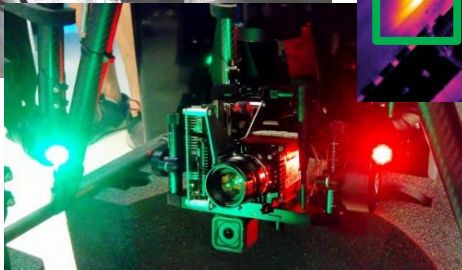
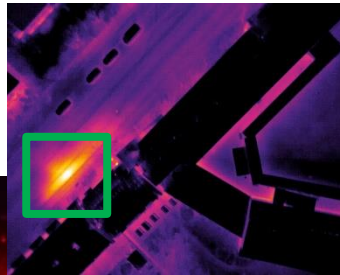
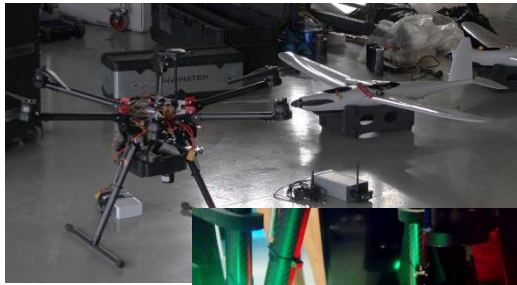


Drone inspection of energy and transport infrastructure

- Enhanced maintenance for better operation



Previous acquisition and analysis of drone imaging for inspection of energy systems at DTU Fotonik

Drone inspection of transport infrastructure

Value Proposition/USP

Progress in drones and their sensors allow faster, cheaper and automatic image acquisition for inspection. At the same time, advances in automatic processing of images using artificial intelligence allow analysis of the vast amount of data collected. Combining those two provides efficient monitoring and evaluation of assets for predictive maintenance of the infrastructure, insuring smooth operation.

Business Opportunity/Objective/Commercial Perspectives

In the transportation domain, kilometers of infrastructure are to be inspected (e.g. for rail or catenary defects in the case of train) without stopping traffic being acceptable and while presenting a high focus on risk prevention. Therefore drones combined with smart data analysis are expected to have a fast-paced development.

Lighting systems inspection and modeling or energy systems inspection are also interesting development areas for this technology.

Technology Description/Technology Summary

Current drones can embed many high-performance sensors (cameras, GPS, ...) at once, thus providing high-quality data to be processed and analyzed. Those data are then fed to artificial intelligence/machine learning models that will learn from them and detect appearing defects in the infrastructure. Due to the large amount of data collected, the machine learning models can achieve satisfying performance while efficiently decreasing the duration and cost of the analysis compared to human evaluation.

Development Phase/Current State

DTU Fotonik has led and participated in projects of drone inspection for maintenance operations on various domains such as district heating or photovoltaic panels. We have built up experience and expertise in all the steps of the imaging/video pipeline: acquisition, compression/transmission, processing (computer vision) and analysis (detection using machine learning) with various types of sensors (visual, Thermal IR, NIR/SWIR). The department also has extensive and long-lasting expertise in communication.

Further research and development is necessary in order to adapt the developed tools to TRL 6-8 for the transportation domain.

The inventors

Claire Mantel clma@fotonik.dtu.dk
Søren Forchhammer sofo@fotonik.dtu.dk

Contact Information

DTU Fotonik
+45 4525 3622
sofo@fotonik.dtu.dk

Seeking

- Industrial partners for joint R&D
- Research collaboration