

UAV-based structural health monitoring of civil infrastructure

This project focuses on the use of Unmanned Aerial Vehicles (UAV or simply drones) to monitor the condition of civil infrastructure.

By developing computer vision algorithms used in the field of robotics, the images recorded by drones will be processed to calculate displacements and accelerations of civil infrastructures, e.g. bridges. Such information will be used to assess the *health* (condition) of structures, thereby ensuring an efficient structural integrity management of civil infrastructure. Moreover, the project outcomes will provide basis for optimizing the limited societal funds devoted for maintenance and inspection of aging infrastructure assets. This will contribute to address one of the main challenges of modern societies – how to efficiently maintain deteriorating civil infrastructure which are increasingly being used.

The project has a duration of three years. It is embedded in COWI via the department of International Bridges (1751) and the Department of Mapping and Geoservices (1403) and will be carried out in collaboration with Aalborg University, Department of Mechanical and Manufacturing Engineering. In addition, DTU Buildings and the Danish Road Directorate will contribute to the project as third parties. The project is conditional on the approval of Innovationsfonden to fund the salary costs of an industrial PhD candidate to conduct the project.

A successful project will create a new paradigm for monitoring and assessment of civil infrastructure by deploying drones for rapid condition assessment. In addition, it will overcome important issues regarding the assessment of civil infrastructure, e.g. accessibility problems and the installation costs of using traditional assessment techniques (e.g. wired sensors).