

Master Thesis

Lakeside Labs

Markus Lang: Path and trajectory planning for a single unmanned aerial vehicle

Description

In disaster response situations it is often very difficult to get an overview of the affected area. Unmanned aerial vehicles (UAVs) are used to generate a bird's eye view of the scenery. This master thesis addresses the question how to store and transmit such images among UAVs and to a base station.

High resolution images taken from the UAVs are annotated with metadata, that will be used to map the scene. To perform image analysis and stitching, images with lower resolutions are required for efficient processing. Therefore it is necessary to store the images in multiple quality layers in so called image pyramids. In the first part of the thesis image formats are evaluated, in the second part addresses the transmission of the images between the UAVs and base stations. The challenge is to find a mechanism to transmit the image pyramids incrementally, In the first step only metadata or low resolution representations of the images are transmitted. Further more, this mechanism must be implemented and integrated into the existing cDrones application framework.

Advisor

Univ.-Prof. Gerhard Friedrich | Dipl.-Ing. Markus Quaritsch