

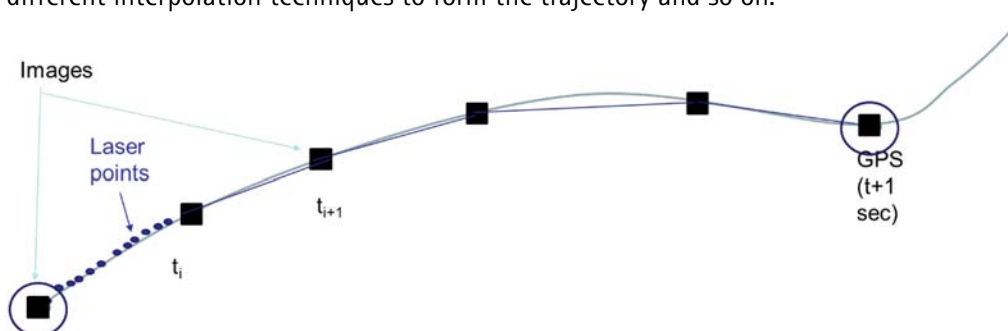
Title

Trajectory simulation of a UAV equipped with camera and laser scanner (EN/DE)

UAV applications in urban areas are getting more diverse every day, e.g. for future delivery systems using drones, that are to be implemented so a package can be delivered very quickly. To reach this goal, quite accurate pose estimation of the drone is required, in order to avoid accidents or crashes and get to the destination with the required safety. To do so, very accurate sensors could be utilized; however, that cannot be done on a small and lightweight UAV system due to technical and physical reasons. An alternative is to use data fusion of different (light-weight) sensors to compensate for their low accuracy. Using laser scanners and cameras is one of the most popular and promising combinations.



In this thesis a simulation environment will be created, which includes laser scanner and image data. For that, a trajectory is to be designed with ample image poses and laser scanner points of the surrounding environment (e.g. building walls, roofs, ...) in the entire trajectory. Extensions on the simulated data will be done at later stages of the thesis work, i.e. adding noise (e.g. vegetation, ...) or holes (windows, ...) to the laser data, different interpolation techniques to form the trajectory and so on.



The simulation then will be used later, to test algorithms for the precise pose estimation of the drone.

Having good programming skills is a prerequisite. The thesis can be written in German or English.

This thesis will be supervised by Mehrnoush Mohammadi, M.Sc.