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Panoramabilderstellung und deren Verwendung zur Verbesserung der Bedienbarkeit von schwenkbaren Überwachungssystemen.

ABSTRACT - Masterthesis

In many application scenarios, zoom cameras are used to detect and identify objects in large distances. For this reason, cameras are equipped to cover a small field of view (large focal distance). In order to determine the object's position in relation to the environment intuitively, even while tracking dynamically moving objects (e.g. flying objects), the systems described above are often used in combination with panoramic view systems. In case there is no panoramic camera available, a panorama image could be created by using the existing zoom camera, in order to improve the overview of the operator.

In this work, a method has been developed to make it possible to obtain a panoramic image by scanning the environment. The image registration is done by using the angular and view information of the sensor platform. As a basis for the implementation, the free program library OpenCV is used, which provides various algorithms to construct a panoramic view image. In this context the perspective distortion, the exposure adjustment, the Voronoi-based seam finding and the multi-band blending are used. The individual images are processed and assembled to obtain a seamless and continuous panoramic image. The results of the implementation are evaluated with pre-defined test scenarios and compared with the reference panoramic view system. It has been shown that the created panorama provides a sufficiently accurate picture of the environment and a comparable panorama quality.