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# An Optimized Image Stitching Approach for Automatic Motion Compensated Offershore-Gangway

Yang Song

Institute of Photogrammetry and GeoInformation

Leibniz University Hannover

Registration number: 10010444

Examiner: Prof. Dr. -Ing. habil. Christian Heipke (IPI, Leibniz University Hannover)

Supervisor: Dr. rer. nat. Michael Erz (CR/AEI1, Robert Bosch GmbH)

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## Abstract

When transferring people and load from moving platform(e.g. transport ship, etc.) to the fixed platform(e.g. offshore wind-turbine, etc.) by the off-shore gangway, there are many challenges such as safety, time-consuming, the state of operator, etc. by manual operation. Therefore an automated and autonomous application needs to be developed. One of the approaches to develop perception KIT, which can assist the docking system is the usage of color images captured by multi-cameras installed at different positions of the gangway. To ensure the docking place and surrounding structures keeping complete in the captured image sequences, we need to stitch them to get the more integral scenario. Due to the viewpoints of cameras are discrepant, after trying the general-purpose stitching methods, an optimized affine invariant image stitching approach has been implemented and leads to a better consequence.

In this paper, the motivation and application context of the gangway docking are introduced firstly. Some necessary theoretical backgrounds about an optimized image stitching method, which can solve the problem of large viewpoint change of the images when stitching are discussed. Comparing to the normal Scale Invariant Image Matching (SIIM) method, our optimized Image Matching by Affine Simulation (IMAS)[3] has the advantages not only in accuracy but also in stability. We do the experiments with separate optimization operations, successfully verify the efficiency and accuracy of the optimized IMAS.