

ESTIMATING THE MUTUAL ORIENTATION IN A MULTI-CAMERA SYSTEM WITH A NON OVERLAPPING FIELD OF VIEW

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Working Groups I/2, III/1, III/4, III/5

KEY WORDS: mutual orientation, non-overlapping field of view, bundle adjustment, motion, image sequence

ABSTRACT:

Multi-camera systems offer some advantages over classical systems like stereo or monocular camera systems. A multi-camera system with a non-overlapping field of view, able to cover a wide area, might prove superior e. g. in a mapping scenario where less time is needed to cover the entire area. Approaches to determine the parameters of the mutual orientation from common motions exist for more than 30 years. Most work presented in the past neglected or ignored the influence different motion characteristics have on the parameter estimation process. However, for critical motions a subset of the parameters of the mutual orientation can not be determined or only very inaccurate. In this paper we present a strategy and assessment scheme to allow a successful estimation of as many parameters as possible even for critical motions. Furthermore, the proposed approach is validated by experiments.

This contribution was selected in a double blind review process to be published within the **Lecture Notes in Computer Science** series (Springer-Verlag, Heidelberg).

Photogrammetric Image Analysis

Volume Editors: Stilla U, Rottensteiner F, Mayer H, Jutzi B, Butenuth M

LNCS Volume: 6952

Series Editors: Hutchison D, Kanade T, Kittler J, Kleinberg JM, Kobsa A, Mattern F, Mitchell JC, Naor M, Nierstrasz O, Pandu Rangan C, Steffen B, Sudan M, Terzopoulos D, Tygar D, Weikum G

ISSN: 0302-9743

The article is accessible online through www.springerlink.com.

