

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

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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.

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