Visual Odometry for Non-overlapping Views Using Second-Order Cone Programming

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Abstract

We present a solution for motion estimation for a set of cameras which are firmly mounted on a head unit and do not have overlapping views in each image. This problem relates to ego-motion estimation of multiple cameras, or visual odometry. We reduce motion estimation to solving a triangulation problem, which finds a point in space from multiple views. The optimal solution of the triangulation problem in L-infinity norm is found using SOCP (Second-Order Cone Programming) Consequently, with the help of the optimal solution for the triangulation, we can solve visual odometry by using SOCP as well.

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