SOLVING FUNDAMENTAL MATRIX FOR UNCALIBRATED SCENE RECONSTRUCTION (ThuAmOR1)

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Abstract :

3D scene reconstruction from uncalibrated image sequences is a challenging problem. One of its critical subproblems is to solve for fundamental matrix in which the algebraic relations between consecutive images are stored. 8−point, normalized 8−point, algebraic minimization and geometric distance minimization methods are tested for their performances against noise by synthetic and real image simulations. The performances of these methods are also tested for determining camera intrinsic parameters by solving Kruppa equations. Considering their computational complexities and noise robustness, the normalized 8−point algorithm gives a comparable performance against more complex algorithms in terms of errors, especially when the number of corresponding points is high.

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