

Effects of rotation and systematic occlusion on fiducial marker recognition

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Abstract

© 2017 The Authors. Fiducial marker systems consist of patterns that are placed in environment for miscellaneous applications and are further automatically detected with cameras. A variety of applications determines the criteria, which characterize qualitative properties of a marker and include such evaluation benchmarks as resilience to occlusion, distance to a marker, false positive and false negative rates, sensitivity to illumination, and others. The paper compares existing ARtag, AprilTag, and CALTag systems utilizing a high fidelity camera, which is a main vision sensor of a full-size Russian humanoid robot AR-601M. In experiments the comparison of the three marker systems reliability and detection rate in occlusions of various types and intensities was verified. Finally, a preferable for AR-601M robot visual applications marker system was selected.

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