

Real-Time Detection of Space Manipulator Self-Collision

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Abstract : In order to avoid self-collision of space manipulators during operation process, a real-time detection method is proposed in this paper. The manipulator is fitted into a cylinder enveloping surface, and then the detection algorithm of collision between cylinders is analyzed. The collision model of space manipulator self-links can be detected by using this algorithm in real-time detection during the operation process. To ensure security of the operation, a safety threshold is designed. The simulation and experiment results verify the effectiveness of the proposed algorithm for a 7-DOF space manipulator.

Keywords : space manipulator, collision detection, self-collision, the real-time collision detection

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