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CONTROL SYSTEM ARCHITECTURE BASED ON MULTI-CAMERA VISION OF CHINA SPACE
REMOTE MANIPULATOR

Abstract

With the development of space technology, China Space Remote Manipulator (CSRM) will play a critical role in the assembly, maintenance and servicing of the space mission. CSRM is an intelligent robotic system with large-scale movement, functional agility, and autonomous ability, and it can be operated by astronauts in the space station or be controlled by the ground operators in the remote operation mode. To realize the autonomous movement and capture mission of CSRM, a kind of autonomous programming strategy based on multi-camera vision fusion is designed, and at the same time, the optimized selection principle of multi-camera visual measurement information is defined for the better precision of object position and orientation. Finally, a distributed control system hierarchy is designed in order to guarantee the reliability of control system. The results of electronic examinations demonstrate that the control system can fulfill the needs of function, real-time and reliability.