Path Planning and Telepresence for Patrolling Mobile Robot

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Abstract

Rapid development in networks and microprocessors much enhances the teleoperation systems, which have been applied to different fields, such as security patrolling mission. Recent research results show that path planning techniques can be incorporated into the teleoperation of mobile robot for efficient navigation. In this thesis, we implement a path planning algorithm in the proposed intelligent human-machine interface for mobile robot navigation. In addition, we design a VR-Based telepresence system. Through this intelligent human-machine interface and telepresence system, the user can not only guide the mobile robot to destination easily, but also view the VR scene via the supporting tool of multi-view. We also develop a force-reflecting strategy to assist the user to manipulate the robot for obstacle avoidance. Consequently, the user may receive visual and haptic information simultaneously through the VR system and the force reflection joystick.