



HAPTIC FEEDBACK IN TELEOPERATION OF MULTIFINGERED ROBOT HANDS

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ABSTRACT—This paper presents a teleoperated robot hand system with haptic tactile feedback. This system enables an operator to control a multi-fingered robot hand while feeling interactions of the robot hand with the remote environment. We have designed a fingertip tactile sensor to capture high resolution and quality tactile images between the fingertip and the environment based on the optical total reflection principle. In order to feed back the tactile information to the operator, an electrotactile glove and a haptic display with 24 pins driven by structured DC solenoids have been developed. The haptic glove generates excitations when a touch/contact between the fingertips and the environment occurs. The tactile display can present contact points on the finger tips. We have integrated the tactile sensor, the haptic glove and the tactile display into a five-fingered hand system and examined their performance and effectiveness by experiments.

Key Words: *Haptic Feedback, Teleoperation, Robot Hands, Tactile Sensors.*