

HAPTICS IN ROBOTICS

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In teleoperation, haptics enhances situational awareness of operators by allowing them to feel forces applied to the robot. However, the traditional method requires the installation of sensors on the robot, which adds cost and mechanical complexity. In response, the team developed an alternative method, Contact Sensing by Tracking Error (CSTE), which uses the robot's feedback control system's tracking error from disturbances (i.e. coming in contact with external objects). By experimentation, CSTE was shown to be nearly as sensitive as the traditional method, while reducing the cost, weight, and mechanical complexity of haptic systems. In addition, unlike the traditional method, forces are detected regardless of the location of contact.

WORK SPACE **SHOWCASE**

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