

Development of Underactuated Robot Hand Using Cross Section Deformation Spring

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Abstract : This paper describes an underactuated robot hand operated by low-power actuators. It can grasp objects of various shapes using easy operations. This hand is suitable for use as a lightweight prosthetic hand that can grasp various objects using few input channels. To realize operations using a low-power actuator, a cross section deformation spring is proposed. The design procedure of the underactuated robot finger is proposed to realize an adaptive grasping movement. The validity of this mechanism and design procedure are confirmed through an object grasping experiment. Results demonstrate the effectiveness of a cross section deformation spring in reducing the actuator power. Moreover, adaptive grasping movement is realized by an easy operation.

Keywords : robot hand, underactuated mechanism, cross-section deformation spring, prosthetic hand

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