

A Novel Soft Robotic Table for Manipulation of Delicate Objects Inspired by Caterpillar Locomotion

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Date 11:00 – 12:00, February 15, 2014 (Wednesday)

Place Mechanical System Seminar Room 1, East Wing 4F

Abstract

This seminar presents a soft robotic table inspired by the locomotion of the caterpillar. The soft table is capable of manipulating objects in three degrees of freedom through the deformation on the soft surface. The softness of the surface enables the table to handle delicate objects such as food products and industry components without damaging them. A novel object manipulation method is inspired by the proleg movement seen in the caterpillar's crawling gait. The table system including its actuation system, pneumatic system, electrical system and user interface is discussed and the modelling of these systems is explained. A prototype of the soft table has been constructed. Experimental results prove that the soft table is able to move an object in both translational and rotational directions on the XY plane.

