סמינריון

הנך מוזמן/ת להרצאה סמינריונית של הפקולטה להנדסת מכונות, שתתקיים ביום ב' 29.08.16
(כה' באב, תשע"ו), בבניין דן-קאהן, קומה 0, אודיטוריום 1, 14:30.

ירצה: צח אלימלך

מנחה: פרופ"מ אמיר גת

על הנושא:

Experimental Illustration of Leveraging Internal Viscous Flow to Extend the Capabilities of Beam-Shaped Soft-Actuators

The seminar will be given in Hebrew

להלן תקציר ההרצאה:

Soft robotics is an emerging field of research and development. Its goal is to design robots with flexible structure that can deform and change their shape and dimensions continuously. The structure and actuation of soft robotics is greatly inspired by biology, where living creatures across a wide span of scales use soft appendages or a flexible body for manipulation or locomotion - from elephant's trunk and octopus' arm to jellyfish and caterpillar. While the mechanism of biological motion is based on muscle actuation, artificial soft robots require some sort of flexible actuation. A promising approach of soft robotics is actuation by pressurization of embedded fluidic networks. While common, currently, the effects of viscosity are not examined in such configurations, thus limiting the available deformation patterns possible by such actuation.

The aim of the presented work is to experimentally examine steady and time dependent deformation of soft actuators by internal viscous flow. We focus on interaction between elastic deflection of a slender beam and viscous flow in a long serpentine channel, embedded within the beam. The embedded network is positioned asymmetrically with regard to the neutral plane, and thus pressure within the channel creates a local moment deforming the beam. We show that by setting appropriate time-varying inlet pressure signal, viscosity enables to increase the possible deformation patterns available to a given actuator geometry and limit the deformation to a section of the actuator. This work connects fluid dynamics to soft robotics research.

בברכה,

פרופ׳/מ אמיר גת
מרכז הסמינרים