

סמינריון

הנך מוזמן/ת להרצאה סמינריונית של הפקולטה להנדסת מכונות שתתקיים ביום ה' 09.12.21 (ה' בטבת, תשפ"ב), בשעה 13:30 באודיטוריום 1, בניין דן קאהן בפקולטה להנדסת מכונות.

מרצה: יונתן פצ'ו

מנחה: פרופ' איל זוסמן

על הנושא:

Ferromagnetic Polarization for Soft Robotic Actuation: Application in endoscopic retrograde cholangiopancreatography (ERCP)

The seminar will be given in Hebrew

תקציר ההרצאה:

This work develops a ferromagnetic soft microrobot that significantly increases the steerability of a guidewire used for non-invasive intravascular diagnostics or therapeutic procedures. The microrobot is attached to the tip of a guidewire, and it is magnetically steered by changing the direction and intensity of an external magnetic field. It consists of a TPU (thermoplastic polyurethane) stripe that is covered with adjustable spaced ferromagnetic rods to create alternate rigid-flexible segments. While exposing the microrobot to external magnetic field, the ferromagnetic rods become magnetized creating strong attraction forces between neighbored rods forming a controllable deformation. Through the use of a direct kinematic approach to steering, a physical model was developed to map the deformation of the microrobot and optimizing its stiffness and controllability. The microrobot was applied in an endoscopic retrograde cholangiopancreatography (ERCP) procedure, which is a common therapeutic option for pancreaticobiliary disorders. Using a simulation of a vascular network, steering capabilities were successfully demonstrated. Also, an assembly of several microrobots was tested as a four-finger gripper that adapts to different geometries and tested in the application of biopsy.

בברכה,

ד"ר איתי סאס

מרכז הסמינרים