

## סמינר - SEMINAR

הנך מוזמן/ת להרצאה סמינריונית של הפקולטה להנדסת מכונות, שתתקיים ביום ב' 6.07.2020  
(י"ד בתמוז תש"פ), בשעה 14:30 באמצעות הזום : <https://technion.zoom.us/j/91044155739>

מרצה:

**Associate Prof. Elon Rimon**

Faculty of Mechanical Engineering  
Technion

על הנושא:

### **PERSPECTIVES ON MINIMALISTIC ROBOT HAND DESIGN AND A NEW CAGING-BASED BIOHAZARD SAMPLE HANDLING ROBOT**

The seminar will be given in English

להלן תקציר ההרצאה:

Ten years of research on minimalistic robot hands resulted in novel robot hand designs and culminated in a new book, *The Mechanics of Robotic Grasping* by Rimon and Burdick. The perspectives gained from this activity will be shared with the Technion Seminar participants, in a talk that will consist of two related parts. Part I describes the configuration space analysis of multi-finger grasps. In so doing, we obtain the minimalistic 2-D and 3-D robot hand designs in terms of number of fingers. Surprise: the minimalistic 3-D design is the classical 3-finger Salisbury hand, with added security of using the hand's palm when object immobilization is necessary. Part II considers the notion of caging, which offers a robust object grasping methodology under huge uncertainty in the finger positions. A novel contact space approach resulted in a series of highly efficient and intuitive caging-to-grasping algorithms, specifically suited for minimalistic robot hands. Two such algorithms will be described for 3-finger robot hands grasping 2-D objects. Using caging grasp principles for 3-D objects, a new table-top robot that opens biohazardous sample-kits in biomedical testing labs will be described.

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Elon Rimon is an Associate professor in the Department of Mechanical Engineering at the Technion – Israel Institute of Technology. Professor Rimon was a finalist for the best paper awards at the IEEE International Conference on Robotics and Automation and the Workshop on Algorithmic Foundations of Robotics, and he was awarded best paper presentation at the Robotics Science and Systems Conference. Professor Rimon is the lead author of the new *Mechanics of Robot Grasping* text, published by Cambridge University Press.

בברכה,

ד"ר איתי סאס

מרכז הסמינרים