הטכניון – מכון טכנולוגי לישראל **הפקולטה להנדסת מכונות**

סמינריון

הנך מוזמן/ת להרצאה סמינריונית של הפקולטה להנדסת מכונות, שתתקיים ביום ה' 3.11.16 (ב' בחשון, תשע"ז), בבניין דן-קאהן, קומה 0, אודיטוריום 1, 13:30.

יוצא: מעוז קין

מנחה: פרופ/ח אילון רימון

על הנושא:

פיתוח דור ב' של רובוט זחל גמיש להתגברות על מכשולים גבוהים
2nd Generation Development of a Flexible Track Robot - RoboTrek, for Autonomous Locomotion over High Obstacles

The seminar will be given in Hebrew

להלן תקציר ההרצאה:

In attempting to robotically locate wounded beneath the ruins of a natural disaster, or map the terrain of tunnels or other urban areas, one tumbles upon a variety of interchanging obstacles from above, below and from its front.

This research demonstrates the development of a smart controlled robot, which will eventually be able to climb steps up to 3 times its height and still crawl in narrow spaces thanks to its 22 cm height.

The robot is made out of aluminum links connected by revolute joints, where each joint can be locked or released for rotation, using a Wrap Spring Clutch mechanism which is controlled by the algorithm of the software commanding it..

The driving mechanism is only one high power actuator which drives the links forward as the joints are released and locked in a synchronized matter. Each link is equipped with sensors such as accelerometers and hall effect in order to receive an input of the relative angle of each of the links and of the relative position to the frame of the robot.

In the process of this research, alongside the electromechanical design and the testing of a working prototype of the robot, an algorithm was developed, analytical static simulations of climbing were tested in order to sharpen the algorithm and a formula was formulated describing the relation between the number of links that is needed in order to climb a step in a desired height, with a given link length and height.

The current prototype of the robot had succeeded in climbing a 30 cm step with 26 links with a link length of 65 mm and height of 47mm. Furthermore, the prototype had succeeded in overcoming a staircase. The highest speed tested for a plane crawl was $60\frac{mm}{\sec}$.

בברכה,

שירלי אמיר שמש

מרכז הסמינרים