

הנדך מוזמנת להרצאה סמינריונית של הפקולטה להנדסת מכונות, שתתקיים ביום ה' 31.05.2018 (יז' בסיון, תשע"ח), בניין דן קאהן, אודיטוריום 1, 13:30.

מרצה: ירון וקסלר

מנחה: פרופ' אילון רימון

על הנושא:

On-Line Evasive Navigation of an Autonomous Robot in a Planar Unknown Environment

The seminar will be given in Hebrew

תקציר ההרצאה:

This research is concerned with the on-line navigation of a circular robot of size D in an unknown hostile environment. The hostility of the environment in this thesis requires the robot to try to avoid open areas where it can be easily noticed. This quality of the motion of the robot is reflected by allowing the robot to move along a movement graph consisting of contact preserving curves and local minimum distance lines connecting these obstacle-encircling paths. The thesis defines the movement graph of a general environment and establishes the optimal off-line navigation path, using the A-star algorithm.

The movement graph's construction method guarantees the graph to be planar. It then introduces the Evasive on-line algorithm, which builds a partial movement graph based on the known information gathered by the robot during the navigation by using a laser sensor and position sensor, and explores the graph inside a series of expanding search ellipses by utilizing the nearest neighbor algorithm. The performance analysis of a navigation algorithm is done by defining competitiveness which is the measure of the algorithm path's length l , relative to the optimal off-line path length l_{opt} . This algorithm is shown to have a log-quadratic competitive relation.

בברכה,

פרופ' אילון רימון

מרכז הסמינרים