שם הקורס: "Algorithms for Submodular Optimization"
"אלגוריתמים לבעיות תת-מודולריות".

מספר הקורס: 236610

סמסטר: אביב תשע"ז

מרצה:	**דר' רועי שוורץ**
שעות הרצאה:	**ג' 12.30-14.30**
שעת תרגול:	
דרישות קדם:	**Algorithms 1 (234247), Computability Theory (236343) and a course in probability.**
אתר הקורס:	

תאור הקורס

Submodular functions, which capture the property of diminishing returns, are ubiquitous in various disciplines, including combinatorics, graph theory, machine learning, economics, algorithmic game theory, and information theory. The family of submodular maximization and minimization problems is a prime example of a unified approach that captures both well-known classic problems, e.g., Max-Cut, Max-DiCut, and Generalized Assignment, and real-world applications in diverse settings, e.g., information gathering, image segmentation, viral marketing in social networks, and recommendation systems.

This course deals with the algorithmic foundations of submodular maximization and minimization problems. We will focus on basic problems and algorithmic techniques. Time permitting, the course will cover the following topics: unconstrained and constrained submodular maximization, the greedy approach and its extensions (randomized and continuous), continuous extensions of submodular functions, rounding of the multilinear relaxation, unconstrained submodular minimization, and submodular multiway partition. Open research questions from recent years will also be presented.

דרישות הקורס

Prerequisites: Algorithms 1 (234247), Computability Theory (236343) and a course in probability.