המכללה האקדמית להנדסה
אורט בראודה

Software Engineering Seminar

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Projection Methods, Superiorization and Applications

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Abstract:

Projection methods are iterative algorithms that use projections onto sets while relying on the general principle that when a family of sets is present, then projections onto the given individual sets are easier to perform than projections onto other sets that are derived from the given individual sets. Their robustness, low computational effort and their ability to handle huge-size problems make them very useful for many convex and non-convex real-world problems such as Image Reconstruction, Intensity-Modulated Radiation Therapy (IMRT) Treatment Planning as well as Sudoku and 8 Queens Puzzle.

The Superiorization Methodology is a heuristic tool and its goal is to find certain good, or superior, solutions to feasibility and optimization problems. In many scenarios, solving the full problem can be rather demanding from the computational point of view, but solving part of it, say the feasibility part is, often, less demanding.

In recent years "superiorized" projection methods and other iterative methods have been developed and applied successfully to feasibility, single and multi-objective optimization.

In this talk I will provide an overview on the above concepts, present several theoretical and practical results and also potential direction for future research.