ACM Fellow Distinguished Lecture

Smoothed Complexity of Local Search Algorithms

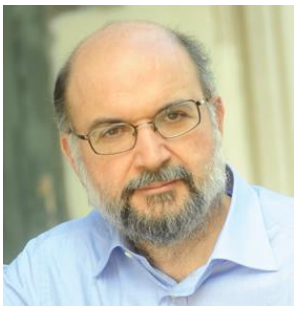
Mihalis Yannakakis

Columbia University

Hosts: Shantanu Sharma and Vincent Oria

Date: Friday, November 7, 2025
Coffee: 11:15 AM – 11:30 AM
Time: 11:30 AM – 12:30 PM
Location: GITC 1400 (1st floor Seminar Lecture Hall)
Zoom Link: https://njit-edu.zoom.us/j/95903616720?pwd=UrsFtzLWaZFP0ePgVmqLxAOES8ECNn.1

Abstract:
Local search is a popular, general paradigm for hard optimization problems. Typically, local search algorithms run fast in practice, yet many of them have exponential worst-case complexity due to delicate pathological instances. The smoothed analysis framework, a hybrid between the classical worst-case and average case analysis, was introduced by Spielman and Teng to address such discrepancies between the empirical and worst-case performance of algorithms. In this talk we will discuss progress in the smoothed analysis of simple local search algorithms in various settings, eg. Markov Decision Processes, Graph Partitioning, and Maximum Constraint Satisfaction Problems.



Bio:

Mihalis Yannakakis is Percy K. and Vida L. W. Hudson Professor of Computer Science at Columbia University. Prior to joining Columbia, he was Head of the Computing Principles Research Department at Bell Labs, and Professor of Computer Science at Stanford University. Dr. Yannakakis received his PhD from Princeton University. He has served on the editorial boards of several journals, including as the editor-in-chief of the SIAM Journal on Computing, and has chaired various conferences, including STOC, FOCS and PODS. Dr. Yannakakis is a recipient of the Knuth Prize, the INFORMS John von Neumann Theory Prize, he is a member of the National Academy of Sciences, the National Academy of Engineering, the American Academy of Arts and Sciences, and of Academia Europaea.