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INSTITUTE FOR SENSING AND EMBEDDED NETWORK SYSTEMS ENGINEERING
Division of Research
Florida Atlantic University

Dr. Moises Sudit
Distinguished Lecture Series

Realistic Expectations in Solving Problems with Exponential Decision Spaces

Monday, April 4th, 2022
10:00 – 11:00 A.M.
Engineering East – EE-303

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ABSTRACT

There is a misconception that the progress in AI/ML is a new way to conquer "hard" problems. The dramatic increase of computer power, while the physical size of the hardware has decreased tremendously, provides a false sense of security. We will show the fundamental reason why "hard" problems remain hard. Then we will present two projects (one funded by the Air Force Office of Scientific Research and one supported by NASA) on rigorous methods to provide implementable solutions. As part of the approaches used in the projects, we will show how AI/ML can be used as an augmenting force to optimization tools in solving NP-Hard problems. Finally, we will describe strategies that could help obtain funding from the Department of Defense and Intelligence Community agencies.

BIOGRAPHICAL SKETCH

Moises Sudit is a Professor of Industrial and Systems Engineering at the University at Buffalo (UB) as well as Executive Director of the Center for Multisource Information Fusion at that institution. Dr. Sudit also is the Chief Scientist at CUBRC (a non-for-profit Research Center in Buffalo). Primary research interests are in the theory and applications of Discrete Optimization and Information Fusion. More specifically, he has been concerned with the design and analysis of methods to solve problems in the areas of Integer Programming and Combinatorial Optimization. One primary goal of this research has been the development of efficient exact and approximate (heuristic) procedures to solve large-scale engineering and management problems. Recently, Dr. Sudit has worked on the potential benefits of using Artificial Intelligence and Machine Learning when high-fidelity mathematical models are unknown. He has merged the interests of Discrete Mathematics with Information Fusion to solve Big Data NP-Hard problems. Dr. Sudit is an NRC Fellow through the Information Directorate at the Air Force Research Laboratory and has received a number of scholarly and teaching awards. He also received the prestigious IBM Faculty Scholarship Award. During his three-year appointment as Associate Vice President for Sponsored Research at UB, the university experienced a 20% increase in sponsored research and the implementation of state-of-the-art administrative tools. Dr. Sudit has a number of publications in distinguished journals and has been the Principal Investigator in numerous research projects. He obtained his Bachelor of Science in Industrial and Systems Engineering from Georgia Institute of Technology, his Master of Science in Operations Research from Stanford University, and his Doctorate in Operations Research from Purdue University.