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ANAND SUBRAMANIAN
Associate Professor
Universidade Federal da Paraíba (UFPB), Brazil



HYBRID ITERATED LOCAL SEARCH FRAMEWORKS FOR CLASSES OF COMBINATORIAL OPTIMIZATION PROBLEMS

Abstract: In this talk, we present two frameworks based on the iterated local search (ILS) metaheuristic for solving classes of combinatorial optimization problems. The first framework consists of a combination of ILS and the randomized variable neighborhood descent (RVND) procedure, whereas the second one is a matheuristic approach that integrates ILS, RVND and a mathematical programming-based procedure. We consider classes of problems that can be represented using a single sequence of elements (e.g., variants of the traveling salesman problem, single machine scheduling problems), multiple sequences of elements (e.g., vehicle routing problems, parallel machine scheduling problems), and multiple sets of elements (e.g., clustering problems). Moreover, we provide guidelines on how to efficiently perform move evaluation and feasibility checking during local search, as well as efficient mechanisms to improve computational performance.

Short Biography: Anand Subramanian is an Associate Professor at Universidade Federal da Paraíba (UFPB), Brazil. He received his B.Sc. degree in Mechanical Production Engineering from UFPB in 2006 and his M.Sc. degree in Production Engineering in 2008 from the same institution. He obtained his doctorate in Computing in 2012 from the Universidade Federal Fluminense (UFF), Brazil. His doctoral thesis received the Honorable Mention Award from the Brazilian Ministry of Education, and it was selected among the top 6 thesis (presented in 2012) by the Brazilian Computing Society. His research interests are mainly related to developing heuristic, exact and hybrid algorithms for combinatorial optimization problems. He is the head of the Logistics and Optimization Group (LOG) at UFPB and is an author of 65 articles published in prestigious international journals. In 2016 he received the highly cited research award from Elsevier for the paper "A hybrid algorithm for a class of vehicle routing problems" published in Computers & Operations Research (C&OR). In addition, he supervised the works that won the prize for the best undergraduate paper at the Brazilian OR Conference in 2015 and 2021. He also supervised one of the finalist works for the INFORMS Undergraduate OR Prize in 2024. Moreover, he has been a member of the Editorial Advisory Board of C&OR since 2019, and coordinates or has coordinated 11 research projects with public or private funding. Anand is the organizer and host of the "Subject to" podcast.

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Responsable :
Jean-François Côté