Session Detail Information

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Cluster : INFORMS Undergraduate Operations Research Prize

Session Information : Sunday Nov 01, 11:00 - 12:30

Title: INFORMS Undergraduate Operations Research Prize I
Chair: Aurelie Thiele,Lehigh University, 200 W Packer Ave, Bethlehem PA 18015, United States of America, aut204@lehigh.edu

Abstract Details

Title: A Composite Risk Measure Framework for Decision Making under Uncertainty
Presenting Author: Pengyu Qian,Columbia University, Columbia Business School c/o PhD Office, 3022 Broadway,311 Uris Hall, New York NY 10027, United States of America, qianpengyu@pku.edu.cn
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Abstract: In this talk, we present a unified framework for decision making under uncertainty. Our framework is based on the composite of two risk measures accounting for parametric (given distribution) and distributional uncertainty respectively. The framework generalizes many existing models. We also propose new models within this framework whose solutions have probabilistic guarantees and are less conservative comparing to traditional models. Numerical experiments demonstrate the strength of our models.

Title: A Faster Algorithm for the Resource Allocation Problem with Convex Cost Functions
Presenting Author: Chao Qin,Ph.d. Candidate, Northwestern University, 2145 Sheridan Road, Evanston IL 60208, United States of America, chaoqin2019@u.northwestern.edu
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Abstract: We revisit the classical resource allocation problem with general convex objective functions, subject to an integer knapsack constraint. This class of problems is fundamental in discrete optimization and arises in a wide variety of applications. In this paper, we propose a novel polynomial-time divide-and-conquer algorithm and prove that it has a computational complexity of O(n log n log N), which outperforms the best known polynomial-time algorithm with O(n (log N)^2).

Title: Integrated Optimization of Aircraft Utilization And On-time Performance
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Abstract: This paper concerns the decision-support system created for Pegasus Airlines of Turkey, designed to improve the company's two key performance indicators; aircraft utilization and on-time performance. A unique approach is introduced to tackle the tradeoff between these two indicators via mathematical modeling. Significant improvements in operational performance and customer satisfaction are achieved as the previously manually done flight scheduling process has been automatized.

Title: Routing Optimization of a Drone for Agricultural Inspections

Presenting Author: Kaan Telciler,Koc University, Rumelifeneri yolu Koç University, Main Campus Sariyer, Istanbul, Turkey, ktelciler@ku.edu.tr

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Abstract: Drones can be used in various areas with developing drone technologies. In order to provide an automized usage for drones, there is a need of routing approach. We developed a mathematical model and routing heuristic for drones which considers recharge stations, battery limit, wind changes, restricted regions and sequential routes. We used cluster first, route second approach for heuristic. In several datasets and cases, we obtained near-optimal routing in feasible times.