Metaheuristics Graduate Course

21 – 23 February 2018
Campus Ciutadella, Universitat Pompeu Fabra, Barcelona, Spain

Metaheuristics are general high-level procedures that coordinate simple heuristics and rules to find high-quality solutions to difficult optimization problems. They are based on distinct paradigms and offer different mechanisms to go beyond the first solution obtained that cannot be improved by local search. They are frequently built upon a number of common building blocks such as greedy algorithms, randomization, neighborhoods and local search, reduced neighborhoods and candidate lists, intensification, diversification, path-relinking, and periodical restarts. Metaheuristics are among the most effective solution strategies for solving combinatorial optimization problems in practice and very frequently produce much better solutions than those obtained by the simple heuristics and rules they coordinate. They are designed to solve large-scale optimization problems that cannot be solved in reasonable processing time by the classic combinatorial optimization methods.

Lecturers

Christian Blum
Artificial Intelligence Research Institute, IIIA-CSIC

Angel A. Juan
Internet Computing & Systems Optimization Research Group – IN3
Universitat Oberta de Catalunya

Jésica de Armas
Universitat Pompeu Fabra & BGSMath

Belén Melián-Batista
Universidad de La Laguna

Sofiane Oussedik
Technical Sales and Solutions Leader, IBM Analytics - Decision Optimization

Helena Ramalhinho
Director of the Business Analytics Research Group
Universitat Pompeu Fabra & BGSMath

Fatos Xhafa
Departament de Ciències de la Computació, Universitat Politècnica de Catalunya

Location

Auditori de Mercé Rodoreda, Campus Ciutadella, Universitat Pompeu Fabra, Barcelona

Full schedule

Wednesday, 21 February
11.30 – 13.30
Introduction to Combinatorial Optimization and Applications (Helena Ramalhinho)

Lunch

15.00 – 17.00
Introduction to CPLEX – IBM (Sofiane Oussedik)

Thursday, 22 February
9.00 – 11.00
Iterated Local Search (Helena Ramalhinho)

Coffee Break

11.30 – 12.30
Application of Metaheuristics in Port Logistics (Belén Melián-Batista)

12.30 – 13.30
Simheuristics: extending metaheuristics to cope with real-life uncertainty (Angel Juan)

Lunch

15.00 – 17.00
Hybrid metaheuristics: Combining metaheuristics with other techniques for optimization (Christian Blum)

17.00 – 18.30
Machine Learning & Metaheuristics: hybridizing metaheuristics with machine learning for optimization with dynamic inputs (Jésica de Armas)

Friday 23 February
9.30 – 11.00
Meta-heuristics for Cloud Optimisation (Fatos Xhafa)

Coffee Break

11.30 – 12.30
Biased Randomized Algorithms with Applications (Angel Juan)

13.00 – 13.30
Closing remarks