Seminars Cycle Announcement

May 9th, 11th, 15th, 16th, 18th, 2017
AULA C2A, Ground Floor, Ed. 3/A DIETI - Via Claudio, 21 NAPOLI

Teodor Gabriel Crainic, PhD, FRSC
Professor of Operations Research, Logistics and Transportation
School of Management, UQAM
Director, Laboratory for Intelligent Transportation Systems
CIRRELT – Interuniversity Research Centre on Enterprise Networks, Logistics and Transportation
Montreal, Canada
TeodorGabriel.Crainic@cirrelt.net

Optimization Methods and Applications
Heuristics for Combinatorial Network Optimization

Operations Research provides methodology to “solve” a very broad variety of decision-making problems. The two pillars of O.R. are the modelling of the problem to address yielding the mathematical formulation, and the resolution of this formulation by an appropriate solution method. Approximate solution methods, also known as heuristics, aim to identify good solutions within appropriate (i.e., compatible with the requirements of the problem being addressed) computing efforts, and are thus extensively used, in particular for complex problem of realistic dimensions. The goal of this series of seminars is to present a brief overview of the field of heuristics. We will use two major classes of Network Optimization problems, network design and vehicle routing, as illustrative examples in our journey from simple heuristics to meta-heuristic search, from neighbours and populations to matheuristics and cooperative search.

C.V.: Teodor Gabriel Crainic is Professor of Operations Research, Transportation, and Logistics, School of Management, Université du Québec à Montréal. He is also Adjunct Professor with the Department of Computer Science and Operations Research of the Université de Montréal, and senior scientist at CIRRELT, the Interuniversity Research Center for Enterprise Networks, Logistics and Transportation, where he is Director of the Intelligent Transportation Systems Laboratory. Professor Crainic is Associate Editor for Transportation Science and serves on several other editorial boards. He co-founded the TRISTAN (Triennial Symposium on Transportation Analysis) and Odysseus (International Workshop on Freight Transportation and Logistics) series of international meetings. He was President of the Transportation Science and Logistics Society of INFORMS, received the 2006 Merit Award of the Canadian Operational Research Society, and is a member of the Royal Society of Canada – The Academies of Arts, Humanities and Sciences of Canada.

The research interests of Professor Crainic are in network, integer, and combinatorial optimization, meta-heuristics, and parallel computing, and applications to the planning and management of complex systems, transportation and logistics, in particular, with major contributions to the national/regional planning, the design and scheduling of services, integrating uncertainty, resource and revenue management considerations, for consolidation-based carriers, operations management for modal and intermodal carriers and terminal operators, routing and scheduling, Intelligent Transportation Systems and City Logistics. He published over 240 scientific papers, has a h-index of 63 (Google Scholar, April 2017), and supervised over 130 graduate students and postdoctoral fellows.

Info: Claudio Sterle - tel. 081-7685911- claudio.sterle@unina.it
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May 9th, 14:30 – 16:30 -
1. Optimization: models, methods, and tools
2. Network Optimization and heuristics

May 11th, 8:30 – 10:30
3. Heuristics and exact methods
4. Neighbourhood-based Heuristics and Local search

May 15th, 14:30 – 16:30
5. Neighbourhood-based meta-heuristics: Tabu Search

May 16th, 14:30 – 16:30
8. Population-based meta-heuristics: Scatter Search and Path Relinking

May 18th, 8:30 – 10:30
9. Parallel meta-heuristics
10. Cooperative search

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