Scuola Superiore Sant'Anna
di Studi Universitari e di Perfezionamento

retis
Real-Time Systems Laboratory

Istituto di Tecnologie
della Comunicazione
dell'Informazione e della Percezione

Course on Combinatorial Optimization

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Abstract

The course will cover several techniques of combinatorial optimization, namely complete methods such as Constraint Programming, Integer Linear Programming, Dynamic Programming and incomplete methods that go from simple local search to more sophisticated meta-heuristics. After a preliminary overview of combinatorial optimization techniques, each of them will be presented in detail with specific emphasis on distinguishing modeling and solving aspects. Finally, one lecture on Hybrid Scheduling will show integrated methods for scheduling problems. In particular, allocation and scheduling of task graph applications on MPSoCs will be presented.

Lecture schedule

Date	Time	Teacher	Room
Wednesday, October 26th	10:00 – 13:00	Michela Milano	Blue room
Wednesday, October 26th	14:00 – 17:00	Michela Milano	Blue room
Friday, October 28th	11:00 – 13:00	Andrea Roli	Blue room
Friday, October 28th	14:00 – 16.00	Andrea Roli	Blue room
Thursday, November 10th	10:00 – 13:00	Enrico Malaguti	Blue room
Thursday, November 10th	14:00 – 17:00	Enrico Malaguti	Blue room
Monday, November 14th	11:00 – 13:00	Michele Lombardi	Blue room
Monday, November 14th	14:00 – 16:00	Michele Lombardi	Blue room

Brief Bios

Prof. Michela Milano received the PhD in Computer Science from the University of Bologna, where she is associate professor since November 2001. Her research interest is in the area of Constraint Programming and its integration with Integer Linear Programming. In these field she has achieved international visibility. She has been program chair of CPAIOR 2005 and CPAIOR 2010 and has published more than 90 papers on international journals and conferences. She edited two books on Hybrid Optimization. She is Area Editor of INFORMS Journal on Computing, Constraint Programming Letters and member of the Editorial Board of the Constraint International Journal.

Dr. Andrea Roli received the PhD in computer science and electronic engineering from Alma Mater Studiorum Università di Bologna, where he currently is assistant professor. His main research interests include hybrid metaheuristics and complex systems, with applications to swarm intelligence, robotics, bioinformatics and genetic regulatory network models. He has published over 60 papers in international fora, both as journal papers and conference papers. He coedited 8 books and 2 journal special issues. He is co-founder and program co-chair for the HM Workshop series (Workshop on hybrid metaheuristics) and he has been conference co-chair for CPAIOR2010.

Dr. Enrico Malaguti received the PhD in Control System Engineering and Operational Research from the University of Bologna, where he is assistant professor since December 2010. His research interest is in the area of Combinatorial Optimization and Integer Linear Programming, where he achieved international visibility for his contribution to the solution of graph coloring problems. He has published more than 10 papers on international journals and has contributed to several invited sessions of international conferences.

Dr. Michele Lombardi is a Post-Doctoral Fellow at DEIS, University of Bologna; his research activity is related to Constraint Programming and its integration with Integer Programming and Artificial Intelligence techniques; in particular, his focus is on resource allocation and scheduling problems. He got a PhD in Computer Engineering at University of Bologna, performing internships at EPFL Lausanne (CH) and Cornell University (NY). He has published papers and performed reviews for international conferences and journals; he is in the program committee of IJCAI 2011 and CPAIOR 2011.