Domenico Salvagnin
Curriculum Vitae - March 2018

Contact information
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Research Interest

Education and Qualifications
2017 National Academic Qualification as Associate Professor.
2011-Today Assistant professor at the Department of Information Engineering, University of Padova.
2009-2011 Post-doc position at the Department of Pure and Applied Mathematics, University of Padova.
2006 Licensed Professional Engineer.

Publications
– Papers


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**Book chapters**


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**Conference proceedings**


− Reports


− PhD thesis


Prizes

1. Winner of the 11th DIMACS Implementation Challenge for the best computer codes for Steiner Tree problems (codes mozartballs, mozartduet and staynerd jointly developed with Matteo Fischetti, Markus Leitner, Ivana Ljubic, Martin Luipersbeck, Michele Monaci, Max Reschand Markus Sinnl), 2014.


Plenary and semi-plenary lectures

Feasibility Pump 2.0
13th Combinatorial Optimization Workshop, Aussois, France, January 2009

Three ideas for the Quadratic Assignment Problem
MIP Workshop, Waterloo, Canada, June 2011
Hunting for split cuts

16th Combinatorial Optimization Workshop, Aussois, France, January 2012

On Solving a Hard Quadratic 3-Dimensional Assignment Problem

18th Combinatorial Optimization Workshop, Aussois, France, January 2014

Detecting and exploiting permutation structures in MIPs

MIP Workshop, Columbus, USA, July 2014

Some experiments with Benders CGLPs

22nd Combinatorial Optimization Workshop, Aussois, France, January 2018

Invited lectures

Fast Approaches to Robust Railway Timetabling

University of Newcastle, Australia, April 2010

A Relax-and-Cut Framework for Gomory’s Mixed-Integer Cuts

University of New South Wales, Sydney, Australia, April 2010
Zuse Institute, Berlin, Germany, July 2010
Institute Montefiore, University of Liege, Liege, Belgium, October 2010

Hunting for split cuts

Zuse Institute, Berlin, Germany, August 2011
CORE, Louvain, Belgium, September 2011
University of Darmstadt, Germany, September 2012
Arizona State University, USA, January 2013

Detecting and exploiting permutation structures in MIPs

Arizona State University, USA, September 2014

Presentations and posters

A Local Dominance Procedure for Mixed-Integer Linear Programming

AIRO Conference, Genova, Italy, September 2007
MIP Workshop Poster, New York, USA, August 2008

Minimal Infeasible Subsystems and Benders cuts

AIRO Conference, Ischia, Italy, September 2008

Feasibility Pump 2.0

Matheuristics Workshop, Bertinoro, Italy, June 2008
Workshop on Bound Reduction Techniques, CPAIOR, Pittsburgh, USA, May 2009
AIRO Conference, Siena, Italy, September 2009

Constraint Programming Techniques for Mixed Integer Linear Programs

AIRO Conference, Siena, Italy, September 2009

An In-Out Approach to Disjunctive Optimization

CPAIOR Conference, Bologna, Italy, June 2010

A Relax-and-Cut Framework for Gomory’s Mixed-Integer Cuts

CPAIOR Conference, Bologna, Italy, June 2010

Hunting for split cuts

SIAM OP11, Darmstadt, Germany, May 2011

Three ideas for the Quadratic Assignment Problem

CPAIOR Conference, Berlin, Germany, May 2011
CREST Workshop, Tokyo, Japan, March 2012

Randomness and Tree Search
ISMP, Berlin, Germany, August 2012

Orbital Shrinking: a new tool for hybrid MIP/CP methods
CPAIOR Conference, Yorktown Heights, USA, May 2013

Detecting and exploiting permutation structures in MIPs
CPAIOR Conference, Cork, Ireland, May 2014

Self-splitting of workload in parallel computation
CPAIOR Conference, Cork, Ireland, May 2014

Detecting Semantic Groups in MIP models
CPAIOR Conference, Banff, Canada, June 2016

Teaching

University of Padova:

2008/2009 lecturer in Mathematical programming to support management decisions, Mathematics.
lecturer in Operations Research I, Information Engineering,
teaching seminar Implementation Techniques for LP and MIP solvers.
teaching seminar Asset Allocation with Excel and VBA.

lecturer in Operations Research I, Information Engineering.
lecturer in Optimization, Mathematics.
teaching seminar Optimization in the economic domain with GAMS.

lecturer in Methods and mathematical models for combinatorial optimization, Computer Science.
professor in Operations Research, Mathematics.

2011-2014 professor in Models and software for discrete optimization, Computer Engineering.

2017-Today professor in Models and software for discrete optimization, Computer Engineering.

Theses supervised:

2012 M. Perin A software to compute the symmetry group of Integer Linear Problems

2012 V. Polonio A MIP formulation for ROADEF/EURO 2011-2012 (machine reassignment)

2014 E. Pasin Algorithms for 2D Bin Packing (a survey)

2014 A. Melchiori Experiments with branching on general disjunctions

Research Visits

2010 Visiting researcher at NICTA, Sydney, to study hybrid MIP/CP methods (joint work with prof. T. Walsh).
2010 Visiting researcher at Zuse Institute, Berlin, to work on the implementation/inclusion of Feasibility Pump 2.0 in the SCIP solver (joint work with T. Berthold).

2011 Visiting researcher at Zuse Institute, Berlin, to study and enhance primal heuristics within the SCIP solver (joint work with T. Berthold).

2011 Visiting researcher at Institute Montefiore, University of Liege, to study practical strategies for deriving cutting planes from multi-row unstructured MIP relaxations (joint work with prof. Q. Louveaux).

2012 Visiting researcher at Zuse Institute, Berlin, to work on the SCIP solver.

2013 Visiting researcher at Arizona State University, to work on assignment problems (joint work with prof. H. D. Mittelmann).

2014 Visiting researcher at Zuse Institute, Berlin, to work on cloud branching (joint work with G. Gamrath and T. Berthold).

2014 Visiting researcher at Arizona State University, to work on assignment problems (joint work with prof. H. D. Mittelmann).

**Professional Experiences**

2003-2004 Collaboration with the Artisti Veneti team of the University of Padova in the Robocup Middle Size project, as software developer.

2006-2007 Participation to the CPDA051592: Integrating Integer Programming and Constraint Programming project of the University of Padova.

2006-2008 Participation to the ARRIVAL (Algorithms for Robust and online Railway optimization: Improving the Validity and reliability of Large scale systems) European project.

2006-2008 Collaboration with the University of Bologna for the Experimentation of algorithms for the resolution of optimization problems in the railway domain, inside the European project UE REORIENT (Implementing Change in the European Railway System).


2007-2009 Participation to the Models and algorithms for robust network optimization PRIN project, MiUR.


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2011-2013 Participation to the *Computational Integer Programming* project of the University of Padova.

2011-2013 Participation to the *Nonlinear aspects in primal MILP heuristics, and in robustness PRIN project, MiUR.*


2013 Collaboration with ALSTOM on train timetabling problems.

2015 Program Committee member for CPAIOR2014.

2014 Collaboration with Inthegra on car sharing problems.

2014 Scientific consultant for IBM ILOG CPLEX.

2015 Program Committee member for MIP2015.

2015-2017 Lead development scientist for IBM ILOG CPLEX.

2016 Senior Program Committee member for IJCAI-16.

2017 Program Chair and Conference Chair for CPAIOR2017.

2017 Program Committee member for CPAIOR2018.

2017-Today Scientific consultant for IBM ILOG CPLEX.

Languages

Italian (native), English (fluent).

Skills

Advanced knowledge of the C/C++ programming language and Unix/Linux/Mac OS X. Expert on advanced usage of MIP solvers (CPLEX/GUROBI/SCIP) and CP solvers (Gecode). Good knowledge of the Python and Java programming languages, of algebraic modeling languages (OPL/GAMS/AMPL), of collaborative tools (Git/Subversion) and of Web development technologies.

Spare Time

ACM Member since 2004.

Software development, trekking, digital photography.

Domenico Salvagnin