

ALBERTO CESELLI
Dipartimento di Informatica
Università degli Studi di Milano
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Scientific activities:

Education and current position:

- February 2002: Master degree in Computer Science, DTI – University of Milan, full marks “cum Laude”
Thesis: “Branch-and-bound and branch-and-price algorithms for the capacitated p-median problem”
- March 2002: A.C.S.U. scholarship “Optimization algorithms for capacitated location problems”, DTI – University of Milan
- April 2002: Scholarship to University of Milan
“Genetic and branch & bound algorithms for partitioning problems”
- December 2002 – November 2005: PhD student in Computer Science, University of Milan
- June – December 2005: Visiting student at the COGA group on the European graduate program “Combinatorics, Geometry and Computation” (with Marie Curie scholarship), Technical University of Berlin (Germany)
- March 2006: Final defense of the PhD dissertation: “Branch-and-price algorithms for partitioning problems” (advisor: Prof. Giovanni Righini, DTI – University of Milan)
- January – August 2006: Research assistant, Technical University of Milan, Department of Electronics and Information.
- Since September 2006: Researcher (assistant professor), SSD INF/01 - SC 01/B1, University of Milan, Department of Computer Science (former Department of Information Technologies). Confirmation evaluation passed in 2010.
- Since January 2014: Italian National Habilitation to Associate Professorship in Computer Science (SSD INF/01 - SC 01/B1)

Awards:

- July 2002: Awarded with A.I.R.O. (Italian O.R. Association) prize “Camerini – Carraresi” 2002, for the best master thesis in “Discrete optimization and its applications”

Research activities:

Combinatorial optimization:

- Computational Integer Programming: automatic decomposition methods; design and experimental analysis of branch-and-cut-and-price algorithms.
- Algorithms for packing, location and routing problems
- Optimization problems in computational molecular biology

Computer Science:

- Hyperplane based and balanced clustering problems in computer science
- Optimization in telecommunications, optical and social networks
- Management of encrypted outsourced databases

Bibliometric facts (computed on 31/08/2014):

29 articles published in international peer-reviewed journals (18 in the last 5 years), 27 currently indexed by WOS and SCOPUS
188 total citations received (counted by SCOPUS only)
h-index: 7; contemporary h-index: 6 (computed using SCOPUS only)
8 articles in "class A" journals, and 5 articles in "class B" journals according to GEV "Computer Science – INF/01" classification; 3 further articles in "class B" journals according to GEV "Applied Mathematics – MAT/07-09" classification

Publications on international scientific journals:

- [1] Ceselli A. "Two exact algorithms for the capacitated p-median problem" *4OR* 1(4): 319-340 (2003)
- [2] Ceselli A., Righini G., "A branch and price algorithm for the capacitated p-median problem", *Networks* 45(3): 125-142 (2005)
- [3] Ceselli A., Damiani E., De Capitani di Vimercati S., Jajodia S., Paraboschi S., Samarati P. "Modeling and assessing inference exposure in encrypted databases" *ACM Transactions on Information and Systems Security* 8(1): 1 – 34 (2005)
- [4] Ceselli A., Righini G. "An optimization algorithm for a penalized knapsack problem", *Operations Research Letters* 34(4): 394-404 (2006)
- [5] Ceselli A., Righini G. "A branch-and-price algorithm for the multilevel generalized assignment problem", *Operations Research* 54(6): 1172-1184 (2006)
- [6] Ceselli A., Liberatore F., Righini G. "A computational evaluation of a general branch-and-price framework for capacitated network location problems", *Annals of Operations Research*, 167:1 - p. 209-251 (2009)
- [7] Bettinelli A., Ceselli A., Righini G. "A branch and price algorithm for the two-dimensional level strip packing problem", *4OR*, 6:4 - p. 361-374 (2008)
- [8] Ceselli A., Righini G. "An optimization algorithm for the ordered open-end bin packing problem", *Operations Research* 56:2 p. 425-436 (2008)
- [9] Bettinelli A., Ceselli A., Righini G. "A branch and price algorithm for the variable size bin packing problem with minimum filling constraint", *Annals of Operations Research*, 179(1) 221-241 (2010)
- [10] Ceselli A., Gatto M., Lübbecke M., Nunkesser M., Schilling H. "Optimizing the Cargo Express Service of Swiss Federal Railways", *Transportation Science*, 42(4) 450-465 (2008)
- [11] Ceselli A., Righini G. Salani M., "A column generation algorithm for a rich vehicle routing problem", *Transportation Science*, 43(1) 56-69 (2009)
- [12] Bettinelli A., Ceselli A., Righini G. "A branch-and-cut-and-price algorithm for the multi-depot heterogeneous vehicle routing problem with time windows ", *Transportation Research C*, 19 – 723-740 (2011)
- [13] Addis B., Carello G., Ceselli A. "Exactly Solving a Two-level Hierarchical Location Problem with modular node capacities", *Networks*, 159(1): 161-180 (2012)
- [14] Casazza M., Ceselli A., Nunkesser M. "Efficient Algorithms for the Double Travelling Salesman Problem with Multiple Stacks", *Computers and Operations Research*, 39(5) 1044-1053 (2012)
- [15] Ceselli A., Fornili S., Righini G. "Algorithms for the design of maximum hydrophobic complementarity molecules", *Journal of Computational Biology*, 19(3) 261-270 (2012)
- [16] Longhi G., Abbate S., Ceraulo L., Ceselli A., Fornili S., Turco Liveri V. "A molecular dynamics study of structure, stability and fragmentation patterns of sodium bis(2-ethylhexyl)sulfosuccinate positively charged aggregates in vacuo", *Phys. Chem. Chem. Phys.* 13 (48): 21423-21431(2011)
- [17] * Ceselli A., Righini G., Tresoldi E. "Optimal Routing Of Planetary Surface Exploration Vehicles ", *Acta Futura* 5: 17-27 (2012)
- [18] Amaldi E., Ceselli A., Dhyani K. "Column Generation for the Minimum Hyperplane Clustering Problem" , *INFORMS Journal on Computing*, 25 (3): 446-460 (2012)

- [19] Ceselli A., Righini G., Tresoldi E. "Modeling and Solving Profitable Location And Distribution Problems", Optimization Letters, 7: 1471-1480 (2013)
- [20] Longhi G., Ceselli A., Fornili S. L., Abbate S., Ceraulo L. and Liveri V. T. "Molecular dynamics of electrosprayed water nanodroplets containing sodium bis(2-ethylhexyl)sulfosuccinate", Journal of Mass Spectrometry, 48: 478-486 (2013)
- [21] ** Ceselli A., Colombo F., Cordone R., Trubian M. "Employee workload balancing by graph partitioning", Discrete Applied Mathematics, 165:112-129 (2014)
- [22] Addis B., Carello G., Ceselli A. "Combining Very Large Scale and ILP based neighborhoods for a Two-level Location Problem ", European Journal of Operational Research, 231 (3): 535-546 (2013)
- [23] ** Ceselli A., Righini G., Tresoldi E. "Combined Location and Routing Problems for Drug Distribution", Discrete Applied Mathematics, 165: 130-145 (2014)
- [24] *** Ceselli A., Righini G., Tresoldi E. "Vehicle Routing Problems with Different Service Constraints: a branch-and-cut-and-price algorithm", Networks, accepted for publication (2013).
- [25] ** Ceselli A., Colombo F., Cordone R. "Balanced compact clustering for efficient range queries in metric spaces", Discrete Applied Mathematics, 169: 43-67 (2014)
- [26] Bettinelli A., Ceselli A., Righini G. "A branch-and-price algorithm for the multi-depot heterogeneous-fleet pickup and delivery problem with soft time windows", Mathematical Programming Computation, 6 (2): 171-197 (2014).
- [27] Casazza M., Ceselli A. "Mathematical programming algorithms for bin packing problems with item fragmentation", Computers and Operations Research, 46: 1-11 (2014).
- [28] Longhi G., Abbate S., Ceselli A., Ceraulo L., Fornili S.L., Turco Liveri V. "Structure, stability, and fragmentation of sodium bis(2-ethylhexyl) sulfosuccinate negatively charged aggregates in vacuo by MD simulations", Journal of the American Society for Mass Spectrometry, 25(9): 1642-1649 (2014)
- [29] Bergner M., Caprara A., Ceselli A., Furini F., Luebbecke M., Malaguti E., Traversi E., "Automatic Dantzig-Wolfe Reformulation of Mixed Integer Programs", Mathematical Programming (A), 149(1-2): 391-424 (2015)

* the journal is index in neither SCOPUS nor WOS

** the paper is correctly indexed in WOS only (including misclassifications in SCOPUS)

*** the journal is indexed in both SCOPUS and WOS, but the paper is not indexed yet

Publications on international conferences with peer-reviewed and published proceedings:

- [30] Secci S., Ceselli A., Malucelli F., Pattavina A., Sansò B., "Direct optimal design of a quasi-regular composite-star core network", proceedings of IEEE 6th DRCN international workshop on the design of reliable communication networks, Springer (2007).
- [31] Ceselli A., Gelmini A., Righini G., Taverna A., "Mathematical Programming bounds for Large-Scale Unit Commitment Problems in Medium-Term Energy System Simulations", proceedings of SCOR 2014, OASICs 37: 63-75 (2014)
- [32] Casazza M., Ceselli A., Letocart L. "Optimizing time slot allocation in single operator home delivery problems", GOR 2014 – Operations Research Proceedings (2014)
- [33] Ceselli A., Premoli M., Secci S., "Cloudlet Network Design Optimization", proceedings of IFIP Networking (2015)

Publications on further international conferences with peer-reviewed (unpublished) proceedings:

- [34] Ceselli A., Righini G., Tresoldi E. "Optimal Routing Of Planetary Surface Exploration Vehicles", poster presentation at IJCAI workshop AI in Space, Barcelona, July 2011.
- [35] Ceselli A., Righini G., Tresoldi E. "Combined Location and Routing Problems in Drug Distribution", proceedings of the 10th CTW, Frascati, June 2011
- [36] Bettinelli A., Ceselli A., Righini G. "Branch-and-price for the multi-depot pickup and delivery problem with heterogeneous fleet and soft time windows ", proceedings of the 9th CTW, Cologne May 2010
- [37] Ceselli A., Cordone R. Melzani Y., Righini G. "Optimization algorithms for the Max Edge Weighted Clique problem with multiple choice constraints ", proceedings of the 9th CTW, Cologne May 2010
- [38] Addis B., Carello G., Ceselli A. "A branch-and-cut-and-price approach for a two-level hierarchical location problem", proceedings of INOC 2009, Pisa April 2009
- [39] Casazza M., Ceselli A., Nunkesser M. "Efficient Algorithms for the Double Travelling Salesman Problem with Multiple Stacks", proceedings of the 8th CTW, Paris June 2009
- [40] Ceselli A., Cordone R., Cremonini M. "Balanced clustering for efficient detection of scientific plagiarism", proceedings of the 8th CTW, Paris June 2009
- [41] Amaldi E., Ceselli A., Dhyani K. "Column Generation for the Minimum Hyperplane Clustering Problem" proceedings of the 7th CTW, Gargnano May 2008
- [42] Casazza M., Ceselli A. "An exact algorithm for bin packing problems with item fragmentation" proceedings of ODYSSEUS 2012, Mykonos May 2012

- [43] Ceselli A., Wolfler Calvo R. "An exact algorithm for the double traveling salesman problem with multiple stacks", proceedings of ODYSSEUS 2012, Mykonos May 2012
- [44] Ceselli A., Righini G., Tresoldi E. "Optimizing waste collection: a branch-and-cut-and-price algorithm", proceedings of ODYSSEUS 2012, Mykonos May 2012
- [45] Basso S., Casazza M., Ceselli A. "Dynamic Programming Algorithms for a Bi-Fuel Shortest Path Problem", ODYSSEUS 2015 (accepted), Ajaccio May 2015
- [46] Ceselli A., Felipe A., Ortuño M.T., Righini G., Tirado G. "A branch-and-cut-and-price algorithm for the green vehicle routing problem with partial recharge and multiple technologies", ODYSSEUS 2015 (accepted), Ajaccio May 2015

Chapters in books:

- [47] Loiseau I., Ceselli A., Maculan N., Salani M. "Generation de Colonnes en Programmation Lineaire en Nombres Entiers", in Optimisation Combinatoire, V. Paschos ed., Hermes-Lavoisier pubs (2005)
- [48] Ceselli A., Colombo A., Righini G., Salani M. « Ottimizzazione nella distribuzione di merci », in Scienza delle decisioni in Italia: applicazioni della ricerca operativa a problemi aziendali, Felici G. e Sciomachen A. eds, ECIG – Genova (2008)
- [49] Loiseau I., Ceselli A., Maculan N., Salani M. "Column generation in Linear-Integer Programming", in Handbook of combinatorial optimization, V. Paschos ed., Wiley-ISTE pubs (2010).

Papers under review, unpublished technical reports, posters and theses:

- [a] Casazza M., Ceselli A., Letocart L. "Dynamically negotiating time slots in attended home service delivery", Note del Polo – Ricerca n. 140, under review (2014)
- [b] Casazza M. Ceselli A. "Exactly solving packing problems with fragmentation", Optimization Online, submitted to Computers and Operations Research (2015)
- [c] Aringhieri R., Ceselli A., Cordone R. "Models and Algorithms for Balanced Rostering with Limited Skills" Note del Polo – Ricerca n. 72, march 2005
- [d] Ceselli A., Lübbecke J., Lübbecke M. and Spenke I. "Locomotives and Rail Cars: Switching, Routing and Scheduling" poster at IMA special workshop: Mixed-Integer Programming – Minneapolis 25-29 July 2005
- [e] Ceselli A., Righini G., Salani M. "Column Generation for the Split Delivery Vehicle Routing Problem" workshop Column Generation 2008, Aussois June 2008; Note del Polo, Ricerca n. 118 (2009)
- [f] Ceselli A. "Optimal orientation of personal rapid transit networks with two stops", Note del Polo, Ricerca n. 117 (2009)
- [g] Ceselli A., Righini G., Tresoldi E. "A Branch-and-price Algorithm for Optimal Routing of Explorer Vehicles", presented at IJCAI – AI in Space Workshop (2011).
- [h] Ceselli A. "Algoritmi branch-and-bound e branch-and-price per il problema delle p-mediane con capacità", degree thesis in Computer Science (in Italian), DTI – University of Milan - february 2002 (published as [1])
- [i] Ceselli A. "Branch and price algorithms for partitioning problems", PhD Thesis in Computer Science – University of Milan (november 2005)

Work-in-progress and earlier versions of research papers have been presented during the last five years to the following conferences:

Combinatorial Optimization Workshop 2009 (Aussois, January 2009); AIROWinter 2009 (Cortina, February 2009); EURO 2009 (Bonn, April 2009); ECCO XXII (Jerusalem, May 2009); ODYSSEUS 2009 (Izmir, May 2009); ISMP 2009 (Chicago, August 2009); AIRO 2009 (Siena, September 2009); AIRO Winter 2010 (Cortina, February 2010); CTW 2010 (Cologne, June 2010), TRISTAN VII (Tromsø, June 2010); EURO 2010 (Lisbon, July 2010); AIRO 2010 (Reggio Calabria, September 2010); IJCAI 2011 (Barcelona, July 2011), CTW 2011 (Frascati, June 2011), AIRO 2011 (Brescia, September 2011); ODYSSEUS 2012 (Mykonos, May 2012), Column Generation Workshop 2012 (Bromont, June 2012), AIRO 2012 (Vietri sul mare, September 2012), EURO – INFORMS 2013 (Rome, July 2013), SCOR 2014 (Nottingham, May 2014), IFORS 2014 (Barcelona, July 2014), GOR 2014 (Aachen, September 2014), CWM3EO (Budapest, October 2014).

Further reports and code implementations:

- [rep. 1] Report "The problem of decoherence and the Schrödinger paradox" (in Italian)
- [rep. 2] Report "Branching methods for partitioning problems" (in Italian)
- [rep. 3] Report "The Pólya enumeration theorem" (in Italian)
- [rep. 4] Project "Implementing BLAST and CLUSTALW in Matlab" (with N. Bianchessi and L. Zaniboni)
- [rep. 5] Report "Optimization with test sets: lecture notes" (with A. Bonisoli and S. Bosio)

Visiting researcher to the following international institutions:

- TU Berlin (December 2008 - January 2009)
- EPFL Lausanne (short visits from 2006 to 2009)
- ETH Zuerich (short visits from 2006 to 2009)
- UC Madrid (March 2010 and May 2012)
- LIPN Paris XIII (October 2010 – February 2011 with CNRS visiting researcher grant, and short visits during May 2012, April 2013, June 2013, April 2014, September 2014)
- RWTH Aachen University (short visit during September 2012).
- LORIA École des Mines de Nancy (short visit and invited talks during June 2014)

Scientific and organization support:

Stream organizer (program committee for routing problems) at EURO conference 2015 (Glasgow, July 2015).

Program committee member of ATMOS 2014 (part of ALGO 2014) (Wroclaw, September 2014)

Stream organizer (program committee for routing problems) at EURO – INFORMS conference 2013 (Rome, July 2013).

Organizing committee member of Seventh Cologne–Twente Workshop on Graphs and Combinatorial Optimization (Gargnano, May 2008).

Teaching activity:

2006-2008:	Course “Programming Languages” (with C. Braghin) master degree in Computer Science and Technologies, DTI – University of Milan
2008-2009:	Course “Programming Languages” master degree in Computer Science and Technologies, DTI – University of Milan
2009-2014:	Course “Programming Languages” degree in Computer Science, DTI and DI – University of Milan
2011-2012:	Course “Network design and optimization” master degree in Computer Science, DTI – University of Milan
2014-2015:	Course “Advanced Computer Programming (with S. Cimato and R. Sassi) master degree in Computer Science, DI – University of Milan
2012-2015:	Course “Information Management” master degree in Computer Science, DI – University of Milan

Further tutoring and teaching support activities:

2009-2012:	Advisor of the PhD thesis of E. Tresoldi “Location and Routing Problems: an unified approach”.
From 2012:	PhD Advisor of M. Casazza (University of Milan, PhD program in Computer Science)
From 2014:	PhD Advisor of M. Premoli (University of Milan, PhD program in Computer Science)
2011-2012:	Advisor of the master thesis of M. Casazza “Optimization algorithms for packing problems with fragmentation”, awarded with Camerini-Carraresi prize 2012.
2006-2014:	Advisor of 13 degree theses and 5 master degree theses at D.T.I. and D.I.
May-July 2004:	International stage co-tutor of Adheesh (Indian Institute of Technology) “New ideas in tabu search for combinatorial optimization problems”. International stage tutor of Ankit Khandelwal (Indian Institute of Technology) “Branch-and-price algorithms for partitioning and assignment problems”.
April - July 2009:	International stage co-tutor of Chetan Sharma (Indian Institute of Technology Kharagpur) “Vehicle routing problems in the distribution of vaccines and antivirals”.
2003-2004:	Seminars for the course “Operations Research: complements” (prof. G. Righini), DTI – University of Milan
2004-2005:	Lab. sessions of the course “Operations Research” (prof. G. Righini) DTI – University of Milan
2005-2006:	Handouts revision of the course “Algorithms and Data Structures (online)” (dr. R. Aringhieri) DTI – University of Milan
2005-2006:	Lab. sessions of the course “Operations Research – first level (fundamentals)” (prof. E. Amaldi), degree in Information Engineering, Technical University of Milan

2005-2007 and 2008/09: Exercise sessions of the course “Operations Research – second level (non linear programming)” (prof. E. Amaldi), master degree in Information, Mathematics, Telecommunications and Automation Engineering, Technical University of Milan

2006-2007: Lab. sessions for the course “Heuristic Algorithms” (DTI – Università degli Studi di Milano)

January 2009: Teacher at the winter school “Optimization Days” (Institute for Theoretical Computer Science, ETH Zürich)

May 2012: Erasmus STA – lectures on real-world routing and scheduling optimization problems (Universidad Complutense, Madrid)

2012/2013: Teacher of “Mathematical Modeling and Algorithms” at TFA courses (high school teachers habilitation), DM – Università degli Studi di Milano

2013/2014: Teacher of “Information Architecture” at IFTS courses (upper level technical courses), DI – Università degli Studi di Milano

2013/2014: Teacher of “Mathematical Modeling and Algorithms” at PAS courses (high school teachers habilitation), DM – Università degli Studi di Milano

2014/2015: Teacher of “Mathematical Modeling and Algorithms” at TFA courses (high school teachers habilitation), DM – Università degli Studi di Milano

Further teaching activities:

From 1998 to 2006: External consultant as teacher for “Introduction to Information Technology” courses, scuola media “D. Birago” in Rivolta d’Adda (CR)

January-February 2005: External consultant as teacher for the project: “Computer Music Lab.”, ENAIP institute, Pioltello (MI)

May 2008 and May 2009: Teacher for high school students, project “Ottimizziamo!”, with regional institutions support (DTI – Università degli Studi di Milano)

2007 – 2008: Teacher of “Introduction to probability and statistics” (IFTS program “Technician for products and industrial development”)

March 2010: Teacher at the Learning Week “Re-creation programming” (Castellanza, IT)

Further organization support:

AIRO Challenges for high school students.

Member of the department committee for student pre and post degree tutoring (since 2007).

Co-organizer of the PLS project at D.T.I. (optimization workshops for high school students).

Referee for the following journals and conferences:

- Journal of the Operational Research Society
- RAIRO – Operations Research
- Optimization and Engineering
- Discrete Applied Mathematics
- Mathematical Programming
- Computational Optimization and Applications
- Operations Research
- Transportation Science
- INFORMS Journal on Computing
- Computers and Operations Research
- Information Sciences
- Operations Research Letters
- 4OR
- Computing
- Procedia
- Transactions on Fuzzy Systems
- European Symposium on Algorithms (ESA) 2006, 2010
- International Network Optimisation Conference (INOC) 2009 and 2013
- 14th Workshop on Algorithmic Approaches for Transportation Modeling, Optimization, and Systems (ATMOS) 2014
- 10ème Conférence Francophone de Modélisation, Optimisation et Simulation de l’économie linéaire à l’économie circulaire (MOSIM) 2014

Member of the following associations:

- Italian Operations Research Society (AIRO), Mathematical Optimization Society (MOS), Italian Computer Science Group (GRIN).

Crema, 13/04/15

(Alberto Ceselli)