

# Valentina Cacchiani

## Contact Information

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## ACADEMIC POSITION

- 2019, November - *present*: *Associate Professor*, Operations Research (MAT/09), Dipartimento di Ingegneria dell'Energia Elettrica e dell'Informazione "Guglielmo Marconi" - DEI University of Bologna, Bologna

## National Scientific Qualification

- 2018, September: Italian academic qualification for Full Professor in Operations Research (MAT/09). Confirmed on October 2023.

## PREVIOUS ACADEMIC POSITIONS

- 2016, November - 2019, October: *Senior Assistant Professor* (Ricercatore a Tempo Determinato Senior), Operations Research (MAT/09), Dipartimento di Ingegneria dell'Energia Elettrica e dell'Informazione "Guglielmo Marconi" - DEI University of Bologna, Bologna
- 2013, November - 2016, October: *Assistant Professor* (Ricercatore a Tempo Determinato Junior), Operations Research (MAT/09), Dipartimento di Ingegneria dell'Energia Elettrica e dell'Informazione "Guglielmo Marconi" - DEI, University of Bologna, Bologna

## EDUCATION

- 2002, December: *Laurea (Master Degree) in Computer Science Engineering*  
Alma Mater Studiorum - Università di Bologna, Bologna  
Grade: 100/100
- 2003, April-December: *Scholarship* at the University of Bologna
- 2003, November: *Engineering Licence*
- 2004-2006: *Ph.D. student in Control System Engineering and Operational Research* at Dipartimento di Elettronica, Informatica e Sistemistica (DEIS), University of Bologna, Advisors Prof. Paolo Toth and Prof. Alberto Caprara
- 2007, May: *Ph.D. in Automatic Control Systems and Operational Research*  
Dipartimento di Elettronica, Informatica e Sistemistica - DEIS  
Alma Mater Studiorum - Università di Bologna, Bologna  
Thesis: Models and Algorithms for Combinatorial Optimization Problems arising in Railway Applications, Advisors: Prof. Paolo Toth and Prof. Alberto Caprara

## POST-DOCTORAL FELLOWSHIPS (Assegni di Ricerca)

- 2007-2012: *Post Doctoral Fellow (Assegnista di Ricerca)*, Dipartimento di Elettronica, Informatica e Sistemistica (DEIS), University of Bologna
- 2013, March - 2013, October: *Post Doctoral Fellow (Assegnista di Ricerca)*, Dipartimento di Ingegneria dell'Energia Elettrica e dell'Informazione "Guglielmo Marconi" (DEI), University of Bologna

## VISITING PERIODS

- 2006, August-December: *Visiting Scholar* at MIT, Cambridge, USA
- 2007, July-August: *Visiting Scholar* at the Harvard Medical School Massachusetts General Hospital, Boston, USA
- 2008, February: *Visiting researcher* at the Department of Production and Operations Management, Universitaet Wien, Vienna, Austria
- 2008, August: *Visiting Scholar* at the Harvard Medical School, Massachusetts General Hospital, Boston, USA
- 2010, July: *Visiting researcher* at the Department of Production and Operations Management, Universitaet Wien, Vienna, Austria
- 2011, May: *Visiting researcher* at the Institut fuer Informatik, Universitaet zu Koeln, Cologne, Germany
- 2012, March: *Visiting researcher* at the Institut fuer Informatik, Universitaet zu Koeln, Cologne, Germany
- 2012, October: *Visiting Researcher* at Universidad de La Laguna, Tenerife, Spain
- 2013, October: *Visiting Researcher* in COST-Action TD1207 at LIX, École polytechnique, Palaiseau, CEDEX, France
- 2014, May: *Visiting Researcher* in COST-Action TD1207 at LIX, École polytechnique, Palaiseau, CEDEX, France
- 2016, September: *Visiting Researcher* at Beijing Jaotong University, Beijing, China
- 2017, May: *Visiting Researcher* at the Institute for Transport and Logistics Management, Wirtschafts Universitaet Wien, Vienna, Austria
- 2018, May: *Visiting Professor* at the Institute for Transport and Logistics Management, Wirtschafts Universitaet Wien, Vienna, Austria
- 2017, November: *Visiting Researcher* at Universidad de La Laguna, Tenerife, Spain
- 2019, April: *Visiting Professor* at Universidad de La Laguna, Tenerife, Spain
- 2022, May: *Visiting Professor* at the Institute for Transport and Logistics Management, Wirtschafts Universitaet Wien, Vienna, Austria
- 2023, April: *Visiting Professor* at the Institute for Transport and Logistics Management, Wirtschafts Universitaet Wien, Vienna, Austria
- 2024, January: *Visiting Researcher* at the Univerisité Gustave-Eiffel, Lille, France
- 2024, May: *Visiting Researcher* at the Institute for Transport and Logistics Management, Wirtschafts Universitaet Wien, Vienna, Austria
- 2024, May: *Visiting Researcher* at Universidad de La Laguna, Tenerife, Spain

## RESEARCH PROJECTS

- 2003-2009 Traffic Control Management research project in cooperation with RFI (member of the research team)
- 2003-2004 UE PARTNER: Path Allocation Re-engineering of Timetable Network for European Railways (member of the research team)
- 2004 Algoritmi di Schedulazione Ottima di Turni Macchina nelle Aziende Ferroviarie, Research Project in cooperation with MAIOR (member of the research team)
- 2006-2009 UE ARRIVAL: Algorithms for Robust and online Railway optimization: Improving the Validity and reliability of Large scale systems (member of the research team)
- 2007-2008 PRIN 2005: Problemi di Routing e Packing nell'Ottimizzazione dei Sistemi di Trasporto (member of the research team)
- 2010-2011 PRIN 2008: Modelli e Algoritmi per Problemi di Ottimizzazione Combinatoria della Gestione di Sistemi di Trasporto (member of the research team)
- 2011-2012 Programme Vigoni: (Italian-German Exchange, Bologna-Colonia) Exact algorithms for robust network design problems (member of the research team)
- 2013 Macroscopic level conflict solution in cooperation with OPTIT and ALSTOM (member of the research team)
- 2011-2014 UE ON-TIME: Optimal Networks for Train Integration Management across Europe (member of the research team)
- 2016 - 2018: SwIFt (Sistemi Intelligenti per la gestione del traffico Ferroviario) POR-FESR 2014-2020 ASSE 1 "Ricerca e Innovazione" with ALSTOM (member of the research team)
- 2017-2018 PRIN 2015: Nonlinear and combinatorial aspects of complex networks (member of the research team)
- 2016 - 2019 (principal investigator): Exact algorithms for the (A)symmetric Traveling Salesman Problem with order dependent constraints and objective function, funded by the Air Force Office of Scientific Research (Project FA9550-17-1-0025)
- 2020 - 2023 Network protection, interdiction and design under uncertainty, funded by the Air Force Office of Scientific Research (Project FA8655-20-1-7019) (member of the research team)
- 2022 (October) - *present* PNRR ECOSISTER - Spoke 6 (Ecosystem for Sustainable Transition in Emilia-Romagna) (member of the research team)
- 2023 - *present* PRIN 2022: Large-scale optimization for sustainable and resilient energy systems (member of the research team)
- 2023 (October) - *present* (international expert): Project with WU Vienna Prof. Hemmelmayr (funded by Oesterreichischen Nationalbank) on Improving the performance of railway systems by using real-time algorithms in disruption management

## AWARDS

- Premio di Laurea Camerini-Carraresi (award for the best Operations Research Master Degree Thesis in the year 2002-2003), assigned by the Italian Association of Operations Research (AIRO)
- Co-author of the paper *A macroscopic railway timetable rescheduling approach for handling large scale disruptions* 3rd place awarded by INFORMS Railway Application Section 2013
- Honorable mention at 2013 OPTL Best Paper Award for the paper *Finding Cliques of Maximum Weight on a Generalization of Permutation Graphs*, Optimization Letters, 7(2), 289-296, 2013
- Co-author of the paper *Micro-Macro Approach to Robust Timetabling* selected in the top 10 papers at RailTokyo2015

- 2021 Winner (with D. Pettinari and E. Tresoldi) of the MINOA Research Challenge on *Non-Periodic Integrated Timetabling and Vehicle Scheduling Problem* - professional category, organized by M.A.I.O.R. company within the EU MINOA Project (Mixed-Integer Non-Linear Optimisation: Algorithms and Application)
- 2022: Transportation Science Meritorious Service Award as Reviewer

## EDITORIAL ACTIVITY

- 01/2016 - 12/2018: Member of the Editorial Advisory Board of Transportation Research Part B
- 2018: Editor (with E. Malaguti, A. Mauttone, P. Toth) of Electronic Notes in Discrete Mathematics 69, Joint EURO/ALIO International Conference 2018 on Applied Combinatorial Optimization
- 2019: Guest Editor (with E. Malaguti, P. Toth) of European Journal of Operational Research 289(3), 807-808, 2021, Feature Cluster: New trends in Applied Combinatorial Optimization
- 2019 - *present*: Associate Editor of Urban Rail Transit
- 2019: Editor (with A. Marchetti-Spaccamela) of OASICs, Volume 75, ATMOS'19, Complete Volume. In 19th Symposium on Algorithmic Approaches for Transportation Modelling, Optimization, and Systems (ATMOS 2019). Schloss Dagstuhl-Leibniz-Zentrum fuer Informatik
- 2019 - *present*: Associate Editor of SN Operations Research Forum
- 2021 - *present*: Associate Editor of Transportation Science
- 01/2022 - *present*: Member of the Editorial Advisory Board of Transportation Research Part E
- 07/2022 - *present*: Guest Editor (with M. Müller-Hannemann and F. Perea Rojas-Marcos) of Operations Research Forum Special Issue on "Public Transport Optimization: From Theory to Practice"

## SEMINARS

- 2005, May: Capacity Planning, UE PARTNER, Rome
- 2007, April: Seminar on Railway Practice, UE ARRIVAL, Erasmus Center for Optimization in Public Transport, Utrecht
- 2008, February: The Train Unit Assignment Problem, Production and Operations Management, Universitaet Wien, Wien
- 2009, June: A Hybrid Approach to Beam Angle Optimization in Intensity-Modulated Radiation Therapy, Université de Liege, Liegi
- 2009, August: Railway Optimization, RUTCOR, Rutgers University, New Jersey
- 2010, July: A Lagrangian Heuristic for Robust Train Timetabling, Production and Operations Management, Universitaet Wien, Wien
- 2011, May: Nominal and Robust Train Timetabling Problems, Universitaet zu Koeln, Cologne
- 2012, May: Models and Algorithms for Robust Network Design with Several Traffic Scenarios, ETH, Zurich
- 2012, October: A Peak-Period based Heuristic Algorithm for the Train Unit Assignment Problem, Universidad de La Laguna, Tenerife
- 2013, October: Models and Algorithms for an Integrated Fleet-Assignment, Aircraft-Routing and Crew-Pairing Problem, LIX, École polytechnique, Palaiseau, CEDEX, France
- 2014, July: The Train Timetabling Problem, Università di Udine
- 2017, May: Models and Algorithms for the Train Timetabling Problem, Wirtschafts Universitaet Wien, Vienna
- 2018, April: Train Timetabling in Highly Congested Lines, Erasmus University Rotterdam, Rotterdam

- 2018, May: Optimizing an Integrated Airline Scheduling Problem, Wirtschafts Universitaet Wien, Vienna
- 2018, October: Recent Variants of the Traveling Salesman Problem, Universidad de La Laguna, Tenerife
- 2018, November: Robust Optimization Models for Integrated Train Stop Planning and Timetabling with Passenger Demand Uncertainty, IFSTTAR, Lille
- 2020, May: On mathematical models, methods, and algorithms for train timetabling, Roma Tre University (online) within the Training Course on Railway Optimization 2020 organized by the AIRO Chapter Optimization in Public Transport and Shared Mobility and by UCL
- 2021, April: Models and algorithms for the train timetabling problem, Roma Tre University (online) within the ROW2021 (Railway Optimization Workshop) organized by the AIRO Chapter Optimization in Public Transport and Shared Mobility
- 2022, May: Integrated Timetabling and Electric Vehicle Scheduling in Public Transport, Lecture Series at WU, Vienna
- 2022, June: Advanced Topics on Train Timetabling, Roma Tre University, within the ROW2022 (Railway Optimization Workshop) organized by the AIRO Chapter Optimization in Public Transport and Shared Mobility and by UCL
- 2022, November: keynote speaker at ISROR (9<sup>th</sup> International Symposium on Railway Operations Research), talk title: Time-index Formulations for Train (Re)Scheduling
- 2024, January: Optimized Train Timetables: Two Case Studies, Univerisité Gustave Eiffel, Lille

## DIDACTIC ACTIVITY

### Teaching

- A.A. 2019 - *present*: Teacher of the master course Optimization Models and Algorithms M, School of Engineering, University of Bologna
- A.A. 2022 - *present*: Teacher of the master course Algorithms for Decision Making M, School of Engineering, University of Bologna
- A.A. 2022 - *present*: Teacher of the master course Mathematical Programming, Mathematics, University of Bologna
- 2023, July: Teacher of the PhD course Introduction to Optimization (9 hours), SIDRA PhD School, Automation Engineering, Bertinoro
- 2023, April: Teacher of the master course Mathematical Methods for Railway Optimization (10.5 hours), WU Vienna University of Economics and Business, Research Institute in Supply Chain Management, Vienna
- 2023, March: Teacher of the PhD course Exact and Heuristic Approaches for Optimization Problems (10 hours), IBES PhD, Automatic Control and Operational Research, University of Bologna
- 2022, May: Teacher of the course Sustainable Logistics (10 hours), Business Administration - Supply Networks and Services, WU Vienna University of Economics and Business, Research Institute in Supply Chain Management, Vienna
- A.A. 2013 - 2022: Teacher of the course Laboratorio di Strumenti di Ottimizzazione TA, School of Engineering, University of Bologna
- A.A. 2019 - 2021: Teacher of a 15-hours module of the master course Ricerca Operativa M, School of Engineering, University of Bologna
- A.A. 2018-2019: Teacher of a 10-hours module of the master course Ricerca Operativa M, School of Engineering, University of Bologna
- A.A. 2018-2019: Supervisor of Project Work For Operations Research, School of Engineering, University of Bologna
- A.A. 2015-2016: Teacher of a 10-hours module of the master course Algorithms for Decision Making M, School of Engineering, University of Bologna
- A.A. 2011-2013: Teacher of the master course: Ottimizzazione dei processi gestionali in Sanità, Master in Ingegneria Clinica, COFIMP, Bologna (together with Prof. Enrico Malaguti)
- 2016, September: Teacher of the master course The Train Timetabling Problem (6 hours), Beijing Jiaotong University, Beijing
- 2017, November: Teacher of the master course Train Scheduling: challenges in planning and real-time (4 hours), Universidad de La Laguna, Tenerife
- 2018, May: Teacher of the master course Optimized Train Scheduling in Planning and in Real-Time (10.5 hours), Supply Chain Management Master Program, WU Vienna University of Economics and Business, Research Institute in Supply Chain Management, Vienna
- 2018 (September), 2020 (February), 2021 (February), 2022 (February), 2023 (February): Teacher at Scuola di Alta Formazione in Ingegneria dei Sistemi per la Mobilità Integrata, University of Bologna: Optimized Train Scheduling in Planning and Real-Time (3 hours)
- Teacher at FS Mobility Academy, University of Naples Federico II: Train Timetabling (3 hours)
- Supervisor of several master and bachelor theses in Computer Science, Industrial Engineering, Automation Engineering, Telecommunications Engineering at the University of Bologna

## Tutoring

- A.A. 2004-2006: Tutor of the course Algoritmi di Ottimizzazione LS, Faculty of Engineering, University of Bologna, Prof. Paolo Toth
- A.A. 2004-2006: Tutor of the course Fondamenti di Ricerca Operativa LA, Faculty of Engineering, University of Bologna, Prof. Alberto Caprara
- A.A. 2004-2007: Tutor of the course Fondamenti di Ricerca Operativa LA, Faculty of Engineering, University of Bologna, Prof. Paolo Toth
- A.A. 2007-2009: Tutor of the course Metodi e Modelli per il Supporto alle Decisioni LS, Faculty of Engineering, University of Bologna, Prof. Alberto Caprara
- A.A. 2009-2011: Tutor of the course Fondamenti di Ricerca Operativa TA-AK, Faculty of Engineering, University of Bologna, Prof. Alberto Caprara
- A.A. 2008-2011: Tutor of the course Ricerca Operativa A, Teledidattico, University of Parma, Prof. Alberto Caprara
- A.A. 2011-2013/2015-2018: Tutor of the course Ricerca Operativa M, Faculty of Engineering, University of Bologna, Prof. Silvano Martello
- A.A. 2015-2022: Tutor of the course Ottimizzazione su Reti M, Faculty of Engineering, University of Bologna, Prof. Silvano Martello

## COMMITTEES AND INSTITUTIONAL ACTIVITIES

- Referee of PhD research proposals at Erasmus Research Institute of Management, Rotterdam
- 2016: Member of the Scientific Review Committee of TRISTAN 2016
- June 2016: Member of the PhD Assessment Committee of Simon H. Bull (“Efficiency and Robustness in Railway Operations”) at DTU, Copenhagen
- 2017: Member of the Program Committee of Clausthal-Göttingen International Workshop on Simulation Science 2017
- 2017: Member of the Program Committee of ATMOS 2017
- April 2017: Member of the PhD Assessment Committee of Niels-Christian Fink Bagger (“Mathematical Programming Approaches for Optimal University Timetabling”) at DTU, Copenhagen
- September 2017 - *present*: Coordinator, with Prof. Andrea D’Ariano, of the AIRO (Italian Association of Operations Research) Chapter “Optimization in Public Transport and Shared Mobility”
- March 2018: Member of the PhD Assessment Committee of “Dottorato di Ricerca in Ingegneria dell’Innovazione Industriale, XXX ciclo”, University of Modena and Reggio Emilia
- 2018: Co-chair of the Organizing Committee of the Joint EURO/ALIO International Conference 2018 on Applied Combinatorial Optimization, Bologna (with E. Malaguti)
- 2018: member of the Program Committee of the Joint EURO/ALIO International Conference 2018 on Applied Combinatorial Optimization, Bologna
- 2019 - *present*: Member of Consiglio Direttivo AIRO (Italian Association of Operations Research)
- November 2018: Member of the PhD Assessment Committee of Lucille Brethomé (“Passenger-Oriented Modelling and Optimization of the Railway Transportation Plan in a Mass Transit System”) at IFST-TAR, Lille
- April 2019: Member of the PhD Assessment Committee of Federico Farina (“Optimization of Operations in Public Transportation”) at DTU, Copenhagen
- 2019: Member of the Program Committee of Clausthal-Göttingen International Workshop on Simulation Science 2019
- 2019: Member of the Program Committee of RailNorrköping 2019

- 2019: Co-chair of the Program Committee of ATMOS 2019 (with A. Marchetti Spaccamela)
- 2020: Member of the Program Committee of ATMOS 2020
- 2020 - 2021: Member of the Transport Panel of the University of Bologna
- 2020: Member of the Program Committee of ODS 2020
- December 2020: Member of the PhD Assessment Committee of Gert-Jaap Polinder (“New models and applications for railway timetabling”) at Erasums Rotterdam University, Rotterdam (online)
- 2021 (March-June): Member of the Department Team at DEI (University of Bologna) for VQR (Valutazione della Qualità della Ricerca) 2015-2019 (MAT/09)
- 2021: Member of the Program Committee of ATMOS 2021
- 2021: Member of the Program Committee of ODS 2021
- 2021: Member of the panel of RAS (Railway Applications Section) INFORMS Competition for the Best Student Paper Award
- October 2021: Member of the PhD Assessment Committee of Rowan Hoogervorst (“Improving the scheduling and rescheduling of rolling stock: solution methods and extensions”) at Erasums Rotterdam University, Rotterdam (online)
- October 2021: Member of the Scientific Advisory Committee of RailBeijing
- 2022: Member of the Program Committee of ATMOS 2022
- 2022: Member of the Program Committee of ODS 2022
- March 2022: Member of the PhD Assessment Committee of Agustín Ismael Montero (“Modelos y algoritmos basados en programación lineal entera para problemas de ruteo de vehículos”) at Universidad de Buenos Aires (online)
- April 2022: Member of the PhD Assessment Committee of IBES PhD In Automatic Control and Operational Research (“Dottorato di Ricerca in Ingegneria Biomedica, Elettrica e dei Sistemi, XXXIV ciclo”), University of Bologna
- 2022: Member of the Scientific Committee and of the Organizing Committee of the EURO Summer Institute on Location Science (ESI2022), Edinburgh, 11-24, June 2022
- 2022: Member of the panel of RAS (Railway Applications Section) INFORMS Competition for the Best Student Paper Award
- 2022 (April-November): Committee Member for a tenure-eligible lecturer in Statistics and Operations Research at the Universitat Politècnica de Catalunya (Serra Hünter Programme)
- October 2022: External examiner of the Master Thesis and PhD Upgrade of J. King (“A new vehicle routing problem for increased driver-route familiarity”) at Stellenbosch University, South Africa (online)
- October, 2022: External reviewer of the PhD Thesis of Patrick Gemander (“Clique-Related Structures in Mixed-Integer Programming: Analysis, Recognition, and Application”) at FAU Erlangen-Nürnberg (online)
- 2023: Member of the Program Committee of ATMOS 2023
- 2023: Member of the Program Committee of ODS 2023
- 2023 (November-December): Committee Member for a Senior Assistant (RTD-B) position in Operations Research (MAT/09) at the University of Pavia
- January 2024: Member of the PhD Assessment Committee of Reza Shahin (“Incorporating Ad Hoc Stops in Public Transport: A Study on Flex-Route Transit”) at Université Gustave Eiffel, Lille
- April 2024: Member of the PhD Assessment Committee of IBES PhD In Automatic Control and Operational Research (“Dottorato di Ricerca in Ingegneria Biomedica, Elettrica e dei Sistemi, XXXVI ciclo”), University of Bologna
- 2024: Member of the Program Committee of ISCO 2024



- 2024: Member of the Program Committee of ODS 2024
- 2024: Member of the Program Committee of the Workshop AI4RAILS 2024
- 2024: Member of the Committee of the Global Urban Rail Transit 2024 Best PhD Dissertation Award
- 2024: Member of the panel of RAS (Railway Applications Section) INFORMS Competition for the Best Student Paper Award

## PHD STUDENTS

- September 2015 - September 2016: co-Advisor of Feng Jiang (visiting PhD student) of the Southwest Jiaotong University, Chengdu, China, on “Development of effective exact and heuristic algorithms for the solution of real-world Railway Optimization Problems” (with Prof. P. Toth)
- Settembre 2016 - Dicembre 2016: co-Advisor of Luis Miguel Escobar Falcon (visiting PhD student) of the Technological University of Pereira, Colombia, on “Exact and heuristic algorithms for the solution of the Pollution Routing Problem” (with Prof. P. Toth)
- September 2017 - September 2018: co-Advisor of Jianguo Qi (visiting PhD student) of the Beijing Jiaotong University, Beijing, China, on “Collaborative optimization for robust train timetable and stop plan” (with Prof. L. Yang)
- November 2015 - Ottobre 2018: co-Advisor of Carlos Contreras-Bolton (PhD student), IBES PhD in Automatic Control and Operational Research, thesis “Algorithms for Variants of Routing Problems” (with Professors P. Toth and D. Vigo)
- December 2017 - April 2018: external Advisor of Gert-Jaap Polinder (visiting PhD student) of the Erasums University Rotterdam, The Netherlands, on “An iterative heuristic for passenger-centric train timetabling with integrated adaption times” (with Professors D. Huisman and M. Schmidt)
- November 2019 - 2022: co-Advisor of Alberto Locatelli (PhD student), thesis “Optimization methods for knapsack and tool switching problems”, Doctorate School in Industrial Innovation Engineering of the University of Modena and Reggio Emilia with Prof. Manuel Iori
- November 2020 - August 2021: Advisor of Daniele Pettinari (PhD student), IBES PhD in Automatic Control and Operational Research of the University of Bologna
- March 2024 - *present*: co-Advisor of Roberto Maria Rosati (post-doc) at WU Vienna with Prof. Vera Hemmelmayr

## PUBLICATIONS

### International Journal Papers

- [1] V. Cacchiani, A. Caprara, P. Toth. A Column Generation Approach to Train Timetabling on a Corridor. *4OR A Quarterly Journal of Operations Research*, 6 (2), 125-142, 2008.
- [2] V. Cacchiani. Models and Algorithms for Combinatorial Optimization Problems arising in Railway Applications. *4OR A Quarterly Journal of Operations Research*, 7 (1), 109-112, 2009.
- [3] V. Cacchiani, A. Caprara, P. Toth. Scheduling Extra Freight Trains on Railway Networks. *Transportation Research Part B*, 44(2), 215-231, 2010.
- [4] V. Cacchiani, A. Caprara, P. Toth. Non-Cyclic Train Timetabling and Comparability Graphs. *Operations Research Letters*, 38 (3), 179-184, 2010.
- [5] V. Cacchiani, A. Caprara, P. Toth. Solving a Real-World Train Unit Assignment Problem. *Mathematical Programming Series B*, 124, 207-231, 2010.
- [6] V. Cacchiani, A. E. Fernandes Muritiba, M. Negreiros, P. Toth. A Multi-start Heuristic Algorithm for the Equality Generalized Traveling Salesman Problem. *Networks*, 57 (3), 231-239, 2011.
- [7] V. Cacchiani, A. Caprara, M. Fischetti. A Lagrangian Heuristic for Robustness, with an Application to Train Timetabling. *Transportation Science*, 46(1), 124-133, 2012.
- [8] V. Cacchiani, P. Toth. Nominal and Robust Train Timetabling Problems. *European Journal of Operational Research*, 219 (3), 727-737, 2012.
- [9] V. Cacchiani, A. Caprara, L. Galli, L. Kroon, G. Maroti, P. Toth. Railway Rolling Stock Planning: Robustness Against Large Disruptions. *Transportation Science*, 46(2), 217-232, 2012.
- [10] V. Cacchiani, A. Caprara, G. Maroti, P. Toth. On Integer Polytopes with Few Nonzero Vertices. *Operations Research Letters*, 41, 74-77, 2013.
- [11] V. Cacchiani, A. Caprara, P. Toth. Finding Cliques of Maximum Weight on a Generalization of Permutation Graphs. *Optimization Letters*, 7(2), 289-296, 2013.
- [12] V. Cacchiani, A. Caprara, P. Toth. A Lagrangian Heuristic for a Train-Unit Assignment Problem. *Discrete Applied Mathematics*, 161(12), 1707-1718, 2013.
- [13] D. Bertsimas, V. Cacchiani, D. Craft, O. Nohadani. A Hybrid Approach to Beam Angle Optimization in Intensity-Modulated Radiation Therapy. *Computers & Operations Research*, 40(9), 2187-2197, 2013.
- [14] V. Cacchiani, A. Caprara, R. Roberti, P. Toth. A New Lower Bound for Curriculum-based Course Timetabling. *Computers & Operations Research*, 40(10), 2466-2477, 2013.
- [15] V. Cacchiani, V. C. Hemmelmayr, F. Tricoire. A Set Covering based Heuristic Algorithm for the Periodic Vehicle Routing Problem. *Discrete Applied Mathematics*, 163(1), 53-64, 2014.
- [16] V. Cacchiani, D. Huisman, M. Kidd, L. Kroon, P. Toth, L. Veelenturf, J. Wagenaar. An Overview of Recovery Models and Algorithms for Real-time Railway Rescheduling. *Transportation Research Part B*, 63, 15-37, 2014
- [17] S. Garcia, V. Cacchiani, L. Vanhaverbeke, M. Bischoff. The Table Placement Problem: a research challenge at the EWI 2007. *TOP*, 22(1), 208-226, 2014.
- [18] E. Álvarez-Miranda, V. Cacchiani, A. Lodi, T. Parriani, D. R. Schmidt. Single-commodity Robust Network Design Problem: Complexity, Instances and Heuristic Solutions. *European Journal of Operational Research*, 238(3), 711-723, 2014
- [19] V. Cacchiani, L. Galli, P. Toth. A Tutorial on Non-Periodic Train Timetabling and Train Platforming Problems. *EURO Journal on Transportation and Logistics*, 4(3), 285-320, 2015.
- [20] A. Bettinelli, V. Cacchiani, R. Roberti, P. Toth. An overview of Curriculum-Based Course Timetabling. *TOP*, 23(2), 313-349, 2015.

- [21] A. Bettinelli, V. Cacchiani, R. Roberti, P. Toth. Rejoinder on: an overview of Curriculum-Based Course Timetabling. *TOP*, 23(2), 366-368, 2015.
- [22] L.P. Veelenturf, M.P. Kidd, V. Cacchiani, L.G. Kroon, P. Toth. A railway timetable rescheduling approach for handling large scale disruptions. *Transportation Science*, 50(3), 841-862, 2015.
- [23] V. Cacchiani, F. Furini, M.P. Kidd. Approaches to a real-world train timetabling problem in a railway node. *Omega*, 58, 97-110, 2016.
- [24] R.M.P. Goverde, N. Besinovic, A. Binder, V. Cacchiani, E. Quaglietta, R. Roberti, P. Toth. A Three-Level Framework for Performance-Based Railway Timetabling. *Transportation Research Part C*, 67, 62-83, 2016.
- [25] V. Cacchiani, M. Juenger, F. Liers, A. Lodi, D.R. Schmidt. Single-Commodity Robust Network Design with Finite and Hose Demand Sets. *Mathematical Programming Series B*, 157(1), 297-342, 2016.
- [26] V. Cacchiani, C. D'Ambrosio. A Branch-and-Bound based Heuristic Algorithm for Convex Multi-Objective MINLPs. *European Journal of Operational Research*, 260(3), 920-933, 2017.
- [27] V. Cacchiani, J.J. Salazar-Gonzalez. Optimal Solutions to a Real-World Integrated Airline Scheduling Problem. *Transportation Science*, 51(1), 250-268, 2017.
- [28] A. Bettinelli, V. Cacchiani, E. Malaguti. A Branch-and-Bound Algorithm for the Knapsack Problem with Conflict Graph. *INFORMS Journal on Computing*, 29(3), 457-473, 2017.
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- A. Bettinelli, S. Bosio, V. Cacchiani. A Real-World Fixed-Sequence Tool Switching Problem with Split Minimization. *ISCO2024*, La Laguna Tenerife, May 2024.
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## Poster Sessions

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- V. Cacchiani, A. Caprara, P. Toth. An LP-based approach to the Train Unit Assignment Problem. *MIP 2007 Workshop on Mixed Integer Programming*, Montreal, July 2007.
- D. Bertsimas, T. Bortfeld, V. Cacchiani, D. Craft, O. Nohadani. A Hybrid Approach to Beam Angle Optimization in Intensity-Modulated Radiation Therapy. *MIP 2008 Workshop on Mixed Integer Programming*, New York, August 2008.
- V. Cacchiani, A. Caprara, P. Toth. Fixed task scheduling on single-thread processors, with application to train-unit assignment. *MIP 2012 Workshop on Mixed Integer Programming*, Davis, July 2012.

## Languages

- Italian: mother tongue
- English: fluent: Cambridge Assessment English Level C1 Advanced