Curriculum Vitae et Studiorum

Sara Ceschia

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Personal information

Name: Sara Ceschia

Affiliation: Polytechnic Department of Engineering and Architecture (DPIA), University of Udine, Via delle Scienze 206, 33100 Udine, Italy

Research group: IOLab, Intelligent Optimization Laboratory (`https://iolab.uniud.it/`)

Current position: Associate professor

ORCID id: 0000-0003-1191-1929

Phone: +39 0432 558272

E-mail: `sara.ceschia@uniud.it`

Website: `https://people.uniud.it/page/sara.ceschia`

Nationality: Italian

Education and training

Ph.D. (2012): Ph.D. in Industrial and Information Engineering from the Department of Electrical, Management, and Mechanical Engineering (DIEGM) of the University of Udine. Thesis: "Local Search Algorithms for Integrated Logistics" . (supervisor prof. Andrea Schaerf).

Master's degree (2008): Master's Degree cum laude in Management Engineering (*Ingegneria gestionale*) at the University of Udine. Thesis: "A system for the automatic management of a delivery plan with a vehicle fleet" (supervisor Prof. Andrea Schaerf).

Bachelor's degree (2005): Bachelor Degree in Information Management Engineering at University of Udine (grade 110/110). Thesis: "Design of an off-line positioning algorithm for electrical drives" (supervisor Prof. Mauro Zigliotto).

High school diploma (2002): High school diploma in classical studies at *Liceo Classico* "J.Stellini" in Udine (grade 100/100).

Professional Qualifications

National Scientific Habilitation (2022): Italian National Scientific Habilitation, Operations Research, Full professor (*Abilitazione Scientifica Nazionale, Settore Concorsuale 01/A6, Ricerca Operativa, Fascia I*).

National Scientific Habilitation (2017): Italian National Scientific Habilitation, Operations Research, Associate professor (*Abilitazione Scientifica Nazionale, Settore Concorsuale 01/A6, Ricerca Operativa, Fascia II*).

Teaching habilitation (2013): Italian qualification of teaching Computer Science (*Tirocinio Formativo Attivo*) in the secondary school.

Professional habilitation (2008) Italian habilitation as a professional Information Engineer (*Esame di stato*).

Work Experiences

Associate professor (28/11/2022 - today): Operations Research (01/A6, Ricerca Operativa) at DPIA (University of Udine).

Assistant professor

- 28/11/2019 – 27/11/2022: researcher in tenure track programme (*RTD b*) at DPIA (University of Udine).
- 16/10/2017 – 27/11/2019, researcher with three-year research contract (*RTD a*) at DPIA (University of Udine).

Project contract (1/1/2017 – 30/6/2017) at DPIA (University of Udine). Project: "Development of a solver in C++ language based on the local search framework EasyLocal++".

Teacher at secondary school (1/09/2016 – 15/10/2017) of Computer Science at the secondary school ITC "Deganutti" and *Liceo Scientifico* "Copernico", Udine.

Post Doc

- 1/1/2016 – 31/08/2016, research fellow (*Assegno di ricerca*), at DPIA (University of Udine). Project: "Models and solution approaches for the nurse rostering problem".
- 1/09/2014 – 31/12/2015, research fellow at DIEGM (University of Udine). Project: "Learning techniques for the automatic selection of algorithms".
- 1/4/2013 – 31/08/2014, research fellow at Area Science Park (Trieste). Project: "Models and algorithms for the developments of an integrated system for the management of personnel shifts, patient admissions and operating rooms in hospitals".
- 1/1/2012 – 31/3/2013, research fellow at DIEGM (University of Udine). Project: "Algorithms and metaheuristics for routing and packing problems".

Ph.D. (1/1/2009 – 31/12/2011) Ph.D. Course in Industrial and Information Engineering (XXIV cycle) at the DIEGM (University of Udine).

Research grant (1/5/2008 –31/12/2008) research fellow "Assegno di Ricerca", at the University of Udine. Project: "Design of pattern, metaheuristic algorithms and software prototype for the logic optimization", funded by Beantech.

National and International grants

Projects as member of the research unit:

- Progetti di ricerca di rilevante interesse nazionale - Bando 2020 (PRIN 2020). *Models and algorithms for the optimization of the integrated healthcare management*, Sector ERC PE6_7 (Artificial intelligence, intelligent systems, multi agent systems). Research unit: Andrea Schaerf (PI), Luca Di Gaspero, Sara Ceschia, Roberto Maria Rosati. Funding: 121.046 €. Duration: 3 years (2022-2025).

- H2020-ECSEL-2020-1-IA-two-stage. *Smart and secure energy solutions for future mobility*. Stefano Saggini (coordinator), Ruben Specogna, Sara Ceschia. Funding for UniUd: 123.410,63 €. Duration: 3 years (2021-2024).

- POR-FESR 2014-2020. *Realtime Damage Manager And Decision Support (SAFE)* Università di Udine, SISSA, CETENA (Fincantieri), Arkitech e Lloyd'S Register. Research group: Andrea Schaerf (coordinator), Luca Di Gaspero, Sara Ceschia. Funding for UniUd: 116.992,40. Duration: 3 years (2019-2022).

Other research grants:

- In March 2013, Sara Ceschia obtained one year PostDoc fellowship ("assegno di ricerca"), funded by the *European Social Fund*, measure S.H.A.R.M (Supporting Human Assets in Research ad Mobility).

- In March 2012, Google Inc. awarded a grant of 34.000 € to the project "Models and metaheuristics for real-world problems in integrated logistics" coordinated by prof. Andrea Schaerf, that has extended the work done by Sara Ceschia during her PhD.

Visiting academic positions

1/1/2010 – 31/6/2010: visiting PhD student at IRIDIA laboratory, Université Libre de Bruxelles (Belgium) under the supervision of prof. Thomas Stützle.

Participation to scientific projects with companies

Optimization of nurse scheduling (2017 – today), funded by Windex (`www.windex.it`), Bussolengo, Verona, Italy.

Optimization of steel production planning (2015 – today), funded by Danieli Automation (`https://www.dca.it/`), Buttrio, Udine, Italy.

EasyPatient (2012–2013), funded by EasyStaff (`http://www.easystaff.it/`), Udine, Italy.

BeanPack (2009–2012) funded by BeanTech (`https://www.beantech.it/`), Colloredo, Udine, Italy.

BeanPath (2008) funded by BeanTech, Colloredo (`https://www.beantech.it/`), Udine, Italy.

Acknowledgments

- In May 2008, she received an award from the Faculty of Engineering as the best graduate of the Management Engineering Course of the University of Udine in the academic year 2006/2007.

Collaborations

- Companies:

  - Windex (`https://www.windex.it`): nurse rostering.
  - Danieli Automation (`http://www.dca.it`): steelmaking scheduling.
  - BeanTech (`www.beantech.it`): logistics, production scheduling.
  - EasyStaff (`www.easystaff.it`): timetabling, healthcare (nurse rostering, patient admission, operating room scheduling), shift design.
  - Cetena (`www.cetena.it`): safety on ships, maintenance.

- Other research groups:

  - IRIDIA group (University Libré of Bruxelles), supervised by Thomas Stützle
  - CODeS group (KAHO Sint-Lieven of Gent), supervised by Greet Vanden Berghe
  - Database and Artificial Intelligence Group, supervised by Nysret Musliu, Vienna University of Technology
  - Minds-ITEC group (KU Leuven), supervised by Patrick De Causmaecker

Research Activity

- Application of local search-based metaheuristics to combinatorial optimization problems of different fields: logistics (routing and packing), timetabling (educational and sport timetabling), healthcare (patient admission, operating theatre, nurse rostering), scheduling (shift design, lot sizing) and energy management.

- System-modeling: development of languages and tools for specifying problems and applications.

Other research activities

Organizing committee membership:

- *Metaheuristic Summer School 2020+1 Competition* (MESS 2020+1), Catania, June 15–18 2021.

- *11th International Conference on the Practice and Theory of Automated Timetabling* (PATAT 2016), Udine, August 23–26, 2016.

- *2nd International Nurse Rostering Competition* (INRC2), October 2014 - August 2015.

- *9th Metaheuristic International Conference* (MIC 2011), Udine, July 25-28, 2011.

- *6th International Workshop on Hybrid Metaheuristics* (HM-2009), Udine, October 16-17, 2009.

Member of:

- AIRO: Italian Association of Operations Research

- PATAT: EURO Working Group on Automated Timetabling

Reviews:

- Journals. A Quarterly Journal of Operations Research (Springer Berlin Heidelberg), Annals of Operations Research (Springer Netherlands), Artificial Intelligence in Medicine (Elsevier), Applied Soft Computing (Elsevier), Computer & Operations Research (Elsevier), Computers & Industrial Engineering (Elsevier), European Journal of Operational Research (Elsevier), International Transactions on Operational Research (Wiley), International Journal of Production Economics (Elsevier), Journal of Computers (Academy Publisher), Journal of Scheduling (Springer), Operational Research (Informs), PeerJ Computer Science, Expert Systems With Applications (Elsevier), Flexible Services and Manufacturing Journal (Springer), Health Systems (Palgrave Macmillan), Journal of Biomedical Informatics (Elsevier), Journal of Computers, Memetic Computing (Springer), Operations Research For Health Care (Elsevier), Operations Research Perspectives (Elsevier), Simulation Modelling Practice and Theory (Elsevier), IEEE Transactions on Intelligent Transportation Systems Magazine.

- Conferences. International Conference on Principles and Practice of Constraint Programming, International Conference on Agents and Artificial Intelligence, International Conference on Applied Operational Research, International Conference on Operations Research and Enterprise Systems, IEEE International Conference on Tools with Artificial Intelligence, International Conference on Intelligent Systems Design and Applications, Metaheuristics International Conference, International Conferences on the Practice and Theory of Automated Timetabling, International Conference on Parallel Problem Solving From Nature, Knowledge Representation and Automated Reasoning Meeting, Genetic and Evolutionary Computation Conference, Multidisciplinary International Scheduling Conference.

Program committee membership:

- *Evolutionary Combinatorial Optimization and Metaheuristics* (ECOM) track at GECCO (2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023)

- *International Conference on the Practice and Theory of Automated Timetabling* (PATAT 2016, 2018, 2020, 2022)

- *Metaheuristic International Conference* (MIC 2022).

Teaching activities and supervision of students

Responsible:

- *Ricerca operativa* (Operations research), 2017 – today, Master Degree in Management Engineering, University of Udine.

- *Metodi e modelli di supporto alle decisioni* (Models and methods for decision making), 2023 – today, Master Degree in Management Engineering, University of Udine.

Teaching assistant (Bachelor and Master Degree in Management Engineering, University of Udine):

- Fundamentals of Computer Programming

- Data Bases

- Software Analysis and Design

- Advanced Scheduling Systems

She has been supervisor of about fifteen students during their master's thesis.

Administrative role and position responsibility

- 2017 – today: *Consiglio del Corso di Studi* of Management Engineering, University of Udine

- 2018 – today: member of the "Charter and code working group" (European Charter of Researchers), University of Udine

- 2021 – today: *Commissione Paritetica Docenti Studenti*, DPIA, University of Udine

- 2021 – 2022: *Collegio dei Docenti* of Phd Course in Mathematical and Physical Sciences, University of Udine

- 2023 – today: *Consiglio dei Docenti* of Phd Course in Mathematical and Physical Sciences, University of Udine