Andrea Spinelli

Curriculum vitae
(Last updated: February 7, 2026)

Personal information

Name and surname: Andrea Spinelli
Date of birth: December 6, 1992
Nationality: Italian
E-mail: andrea.spinelli@unibg.it
Personal webpage: `https://www.andrea-spinelli.it`
ORCID ID: 0009-0001-6616-1718
Scopus Author ID: 58481641000

Current position

- (January 7, 2026 - present) **Research Contractor in Operations Research (MATH-06/A)**.
  Workplace: Department of Management, Information and Production Engineering – University of Bergamo.
  Research Project: *Distributionally robust optimization for vehicle routing problems with decision-dependent uncertainty*.
  Scientific Director: Prof. Francesca Maggioni.

Former positions

- (January 1, 2024 - December 31, 2025) **Postdoctoral researcher in Operations Research (MATH-06/A)**.
  Workplace: Department of Management, Information and Production Engineering – University of Bergamo.
  Research Project: *Optimization under uncertainty models and methods for electric vehicle routing problems* ("ULTRAOPTYMAL - Urban Logistics and sustainable TRAnsportation: OPtimization under uncertainTY and MAchine Learning", PRIN 20207C8T9M).
  Scientific Director: Prof. Francesca Maggioni.

Education

- (June 24, 2024) **PhD in Applied Economics and Management (AEM)** at University of Pavia and jointly at University of Bergamo.
  Title of the thesis: *Optimization under uncertainty: applications to machine learning and waste management*.
  Supervisor: Prof. Francesca Maggioni (University of Bergamo).
  Area: 01 (Mathematics and Informatics).
  Academic discipline: MAT/09 (Operations Research).

- (March 1, 2017) **Master's degree in Mathematics** at University of Milan.
  Mark: 110/110.

Title of the thesis: *A mathematical model of the enterohepatic circulation of bile acids after partial hepatectomy.*

Supervisors: Prof. Paola Causin (University of Milan), Prof. Astrid Decoene and Prof. Jean-Baptiste Lagaert (Paris-Sud University).

- (October 9, 2014) **Bachelor's degree in Mathematics** at University of Milan-Bicocca.
  Mark: 110/110.
  Title of the thesis: *Class A Bézier curves.*
  Supervisor: Prof. Lucia Romani (University of Milan-Bicocca).

- (July 2011) **High school diploma** at Liceo Scientifico F. Lussana, Bergamo.
  Mark: 100/100.

Training courses

- (September 15-15, 2024) **EURO Summer Institute 2024 (ESI2024): "Decision-making under uncertainty for commodities and financial markets"** - Ischia.

- (April 4-8, 2022) **Copenhagen School of Stochastic Programming**. University of Copenhagen (DK).

- (March 22-26, 2021) **Optimization Models for Machine Learning**. PhD Degree in Mathematics and Computer Science. University of Calabria (IT).

- (December 12, 2018) **Percorso formativo personalizzato (24 cfu) per l'accesso ai corsi triennali FIT**. University of Bergamo (IT).
  Exams:

  - Methodology of educational research (M-PED/04)
  - General psychology 2 with laboratory (M-PSI/01)
  - Recognition, evaluation and certification of competences (M-PED/01)
  - Teaching and learning II (M-PED/03)

- (July 19-26, 2015) **ECMI-Modelling Week 2015** - Instituto Superior Técnico, University of Lisbon (PT).

Qualifications

- (June 29, 2022) Italian **secondary teaching** qualifications in **Mathematics**.

Awards and merits

- (March 3, 2023) **Study award "Marco Manera" 2023** - University of Pavia.
  Research project "*A Stochastic Optimization Programming Model for a Waste Collection Problem*" to be carried out in a foreign university. Project completed in collaboration with Prof. Francesca Maggioni (University of Bergamo), Profs. Ana Barbosa-Póvoa and Tânia Ramos (Instituto Superior Técnico, University of Lisbon), Prof. Daniele Vigo (University of Bologna).

- (March 13, 2023) **Local winner of the Three Minutes Thesis (3MT) competition - VII edition** - University of Pavia.
  Title of the presentation: "*Maths in the trash? A mathematical model for waste collection*".

Grants and fundings

- (March 10-22, 2025) **International Mobility Grant - Outgoing Visiting Fellows** granted by University of Bergamo.

- (February 1, 2022 - June 30, 2022) **International Mobility Grant - XII edition** granted by University of Pavia.

- (October 1, 2020 - December 31, 2023) **Full PhD Scholarship** granted by University of Bergamo.

Research interests

Operational Research; Methods and models of optimization under uncertainty, in particular Stochastic Programming, Robust Optimization and Distributionally Robust Optimization, with applications to Machine Learning and problems of logistics and transportation; Didactics of Mathematics.

Research Projects

- (January 1, 2024 - December 31, 2025) **Member** of the research unit at University of Bergamo for the project PRIN 2020 "ULTRAOPTYMAL: Urban Logistics and sustainable TRAnsportation: OPtimization under uncertainTY and MAchine Learning", project code 20207C8T9M. Principal Investigator: Prof. Francesca Maggioni. Website: `https://ultraoptymal.unibg.it`

List of publications

Articles published in peer-reviewed International Journals

[1] Spinelli, A., Bezzi, D., Jabali, O., Maggioni, F. (2026): *A Stochastic Electric Vehicle Routing Problem under Uncertain Energy Consumption*. Transportation Research Part C: Emerging Technologies, 183, 105480. `https://doi.org/10.1016/j.trc.2025.105480`.

[2] De Leone, R., Maggioni, F., Spinelli, A. (2025): *A Robust Twin Parametric Margin Support Vector Machine for Multiclass Classification*. EURO Journal on Computational Optimization, 13, 100115. `https://doi.org/10.1016/j.ejco.2025.100115`.

[3] Piazza, M., Spinelli, A., Maggioni, F., Bedoni, M., Messina, E. (2025): *A Robust Support Vector Machine Approach for Raman Data Classification*. Decision Analytics Journal, 16, 100595. `https://doi.org/10.1016/j.dajour.2025.100595`.

[4] Spinelli, A., Maggioni, F., Pereira Ramos, T., Barbosa-Póvoa, A., Vigo, D. (2025): *A Rolling Horizon Heuristic Approach for a Multi-Stage Stochastic Waste Collection Problem*. European Journal of Operational Research, 323(1), 276–296. `https://doi.org/10.1016/j.ejor.2024.11.041`

[5] Maggioni, F., Spinelli, A. (2025): *A Novel Robust Optimization Model for Nonlinear Support Vector Machine.* European Journal of Operational Research, 322(1), 237–253. `https://doi.org/10.1016/j.ejor.2024.12.014`

Articles published in peer-reviewed Conference Proceedings and Book Chapters

[6] De Leone, R., Maggioni, F., Spinelli, A. (2024): *A Multiclass Robust Twin Parametric Margin Support Vector Machine with an Application to Vehicles Emissions.* In: Nicosia, G., Ojha, V., La Malfa, E., La Malfa, G., Pardalos, P.M., Umeton, R. (eds) Machine Learning, Optimization, and Data Science. LOD 2023. Lecture Notes in Computer Science, vol 14506. Springer, Cham. `https://doi.org/10.1007/978-3-031-53966-4_22`

[7] Maggioni, F., Spinelli, A. (2024): *A Robust Nonlinear Support Vector Machine Approach for Vehicles Smog Rating Classification.* In: Bruglieri, M., Festa, P., Macrina, G., Pisacane, O. (eds) Optimization in Green Sustainability and Ecological Transition. ODS 2023. AIRO Springer Series, vol 12. Springer, Cham. `https://doi.org/10.1007/978-3-031-47686-0_19`

Articles in preparation

[8] Hewitt, M., Maggioni, F., Spinelli, A.: *Integrating bounding approaches into L-shaped decomposition methods for stochastic optimization problems.*

[9] Maggioni, F., Romeijnders, W., Spinelli, A.: *Bounds for decision dependent two-stage stochastic programs.*

Research periods abroad

- (March 10-22, 2025) **Short-term research stay** at Quinlan School of Business, Loyola University Chicago (US).
  Reserch project: *Integrating bounding approaches into L-shaped decomposition methods for stochastic optimization problems and applications to logistics and transportation.*
  Research collaboration with Prof. Mike Hewitt and Prof. Francesca Maggioni.

- (February 1, 2022 - June 30, 2022) **Visiting PhD student** at Instituto Superior Técnico, University of Lisbon (PT).
  Research project: *Development of a stochastic optimization model for waste collection under uncertainty.*
  Research collaboration with Prof. Ana Barbosa-Póvoa, Prof. Tânia Ramos, Prof. Francesca Maggioni and Prof. Daniele Vigo.

- (March 1, 2016 - July 15, 2016) **Research stage** in Applied Mathematics at Paris-Sud University and IN-SERM (FR).
  Research project: *Development of a mathematical model of the enterohepatic circulation of bile acids after partial hepatectomy.*
  Research collaboration with Prof. Astrid Decoene, Prof. Jean-Baptiste Lagaert and Prof. Paola Causin.

Talks and seminars

- (September 1, 2025) *A stochastic electric vehicle routing problem under uncertain energy consumption* - 2nd ULTRAOPTYMAL Workshop at ODS2025, University of Milan (IT).

- (June 23, 2025) *A stochastic electric vehicle routing problem under uncertain energy consumption* - 34th EURO Conference, University of Leeds (UK).

- (February 26, 2025) *A rolling horizon heuristic approach for a multi-stage stochastic waste collection problem* - 9th AIROYoung Workshop, University of Pavia (IT).

- (February 6, 2025) *A robust Twin Parametric Margin Support Vector Machine for multiclass classification* - Poster presented at Workshop on Uncertainty in Machine Learning (WUML2025), University of Milano-Bicocca (IT).

- (September 18, 2024) *A stochastic electric vehicle routing problem under uncertain energy consumption* - EURO Summer Institute 2024 (ESI2024), Ischia (IT).

- (July 1, 2024) *A rolling horizon heuristic approach for a multi-stage stochastic waste collection problem* - 33rd EURO Conference, Technical University of Denmark (DK).

- (September 7, 2023) *A rolling horizon heuristic approach for a multi-stage stochastic waste collection problem* - ODS2023, Ischia (IT).

- (November 24, 2022) *A rolling horizon methodology for a multi-stage stochastic waste collection problem* - CEG-IST Seminar, Instituto Superior Técnico, University of Lisbon (PT).

- (August 30, 2022) *A robust optimization model for nonlinear Support Vector Machine* - ODS2022, University of Florence (IT).

- (July 5, 2022) *A robust optimization model for nonlinear Support Vector Machine* - 32nd EURO Conference, Aalto University (FIN).

- (February 23, 2022) *A robust optimization model for nonlinear Support Vector Machine* - 6th AIROYoung Workshop, Roma Tre University (IT).

- (February 22, 2022) *Potenzialità e responsabilità della scuola per favorire l'inclusione nelle STEM*, University of Bergamo (IT).

- (October 22, 2021) *Piacere, sono... un modello matematico: un esempio di 'buon problema' tra scuola primaria e scuola secondaria*, PIMat, University of Catania (IT).

- (March 11, 2021) *(DIS)parità di genere nelle discipline STEM*, for the International Women's Day, University of Brescia (IT).

- (March 3, 2021) *Matematica e differenze di genere: riflessioni e spunti didattici*, University of Bergamo (IT).

- (November 4, 2020) *STEM e differenze di genere: alcune riflessioni*, University of Brescia (IT).

- (October 21, 2020) *Matematica in poltroncina. Viaggio tra matematici e matematiche nell'immaginario cinematografico*, Cagliari FestivalScienza 2020 (IT).

- (December 3, 2019) *La trasferibilità delle conoscenze: il caso di diritto e matematica*, La didattica delle scienze economico giuridiche nei percorsi 24 CFU, University of Brescia (IT).

- (November 6, 2019) *Diritto e Matematica: l'uso di strumenti matematici nelle applicazioni economico-giuridiche*, University of Brescia (IT).

- (October 10, 2018) *Perché gli studenti fanno sempre gli stessi errori?*, XXXV convegno UMI-CIIM, University of Cagliari. (IT).

Peer review activity

Reviewer of the following journals:

- Annals of Operations Research

- EURO Journal on Computational Optimization

- European Journal of Operational Research

- International Transactions in Operational Research

- Transportation Research Part C: Emerging Technologies

- Transportation Research Part E: Logistics and Transportation Review

- Transportation Science

Teaching

A.Y. 2025/2026

- **Teaching assistant of the course "Ricerca Operativa"** (MAT/09). Department of Management, Information and Production Engineering, University of Bergamo.

A.Y. 2024/2025

- **Teaching assistant of the course "Optimization for Healthcare Problems"** (MAT/09). Department of Management, Information and Production Engineering, University of Bergamo.

- **Teaching assistant of the course "Ricerca Operativa"** (MAT/09). Department of Management, Information and Production Engineering, University of Bergamo.

A.Y. 2023/2024

- **Adjunct professor of the course "Operational Research"** (MAT/09). Faculty of Mathematical, Physical and Natural Sciences, Catholic University of the Sacred Heart of Brescia.

- **Teaching assistant of the course "Ricerca Operativa"** (MAT/09). Department of Management, Information and Production Engineering, University of Bergamo.

- **Teaching assistant of the course "Optimization for Healthcare Problems"** (MAT/09). Department of Management, Information and Production Engineering, University of Bergamo.

- **Lecturer of the course "Modelli Matematici"** (MAT/09). Percorsi universitari e accademici di formazione iniziale dei docenti delle scuole secondarie di primo e secondo grado, classe A-26 Matematica - University of Brescia and University of Bergamo (Centro CE.F.I.).

A.Y. 2022/2023

- **Teaching assistant of the course "Ricerca Operativa"** (MAT/09). Department of Management, Information and Production Engineering, University of Bergamo.

- **Teaching assistant of the course "Analisi Matematica I"** (MAT/05). Department of Engineering and Applied Sciences, University of Bergamo.

A.Y. 2021/2022

- **Teaching assistant of the course "Ricerca Operativa"** (MAT/09). Department of Management, Information and Production Engineering, University of Bergamo.

- **Teaching assistant of the course "Corso di alfabetizzazione di matematica"** (SECS-S/06). Department of Management, University of Bergamo.

A.Y. 2020/2021

- **Teaching assistant of the course "Statistica"** (SECS-S/01). Department of Management, University of Bergamo.

- **Teaching assistant of the course "Corso di alfabetizzazione di matematica"** (SECS-S/06). Department of Management, University of Bergamo.

A.Y. 2019/2020

- **Adjunct professor of the course "Elementi di Matematica"** (SECS-S/06). Department of Management, Economics and Quantitative Methods, University of Bergamo.

- **Lecturer of the course "Didattica speciale: codici del linguaggio logico e matematico (scuola primaria)"** (M-PED/03). Corso di formazione per il conseguimento della specializzazione per le attività di sostegno (scuola primaria) - University of Bergamo.

- **Teaching assistant of the course "Statistica"** (SECS-S/01). Department of Management, University of Bergamo.

- **Teaching assistant of the course "Geometria e Algebra Lineare"** (MAT/03). Department of Management, Information and Production Engineering, University of Bergamo.

- **Teaching assistant of the course "Mathematical Methods for Engineers"** (MAT/05). Department of Management, Information and Production Engineering, University of Bergamo.

- **Teaching assistant of the course "Analisi Matematica e Geometria"** (MAT/05). Department of Management, Information and Production Engineering, University of Bergamo.

- **Teaching assistant of the course "Analisi Matematica I"** (MAT/05). Department of Management, Information and Production Engineering, University of Bergamo.

- **Teaching assistant of the course "Corso di alfabetizzazione di matematica"** (SECS-S/06). Department of Management, Economics and Quantitative Methods, University of Bergamo.

A.Y. 2018/2019

- **Teaching assistant of the course "Geometria e Algebra Lineare"** (MAT/03). Department of Management, Information and Production Engineering, University of Bergamo.

- **Teaching assistant of the course "Mathematical Methods for Engineers"** (MAT/05). Department of Management, Information and Production Engineering, University of Bergamo.

- **Teaching assistant of the course "Analisi Matematica I"** (MAT/05). Department of Management, Information and Production Engineering, University of Bergamo.

- **Teaching assistant of the course "Corso di alfabetizzazione di matematica"** (SECS-S/06). Department of Management, Economics and Quantitative Methods, University of Bergamo.

A.Y. 2017/2018

- **Teaching assistant of the course "Geometria e Algebra Lineare"** (MAT/03). Department of Management, Information and Production Engineering, University of Bergamo.

- **Teaching assistant of the course "Analisi Matematica I"** (MAT/05). Department of Management, Information and Production Engineering, University of Bergamo.

Work experiences

- (September, 2018 - September, 2022) **Collaborator of the MatNet-CQIIA center**, University of Bergamo. Organization and realization of mathematical laboratories for high school students and teachers. Experiences:

    - Design and management of the entry test MatNet in Mathematics for high school students (February 2022 - September 2022).

    - Summer School "Matematica e Scienze della Vita: modelli e algoritmi della salute" (September 5, 2022 - September 7, 2022), San Pellegrino Terme.

    - Design and management of the entry test MatNet in Mathematics for high school students (May 2021 - September 2021).

    - Summer School "Matematica e società: genere, algoritmo, democrazia" (September 1, 2021 - September 3, 2021), Bergamo.

    - "Progetto PLS-POT" (March 1, 2021 - April 16, 2021). Online labs for high-school students preparing for admission tests in Economics and Management.

    - "Waiting for Summer School" (September 2, 2020 - September 10, 2020).

    - Design and management of the entry test MatNet in Mathematics for high school students (May 2020 - September 2020).

    - "Progetto PAEC-POT" (November 4, 2019 - April 30, 2020). The project has been performed in three different high schools: IS "L. Lotto" (Trescore Balnerario), Scuola "IMIBERG" (Bergamo), ITCTS "Vittorio Emanuele II" (Bergamo).

    - "Laboratorio PLS di autovalutazione" (April 16, 2019 - May 22, 2019), performed at high school "L. Einaudi" (Dalmine).

    - Design and management of the entry test MatNet in Mathematics for high school students (May 2019 - September 2019).

    - Summer School "La matematica oggi" (September 2, 2019 - September 4, 2019), San Pellegrino Terme.

    - Summer School "La matematica tra il nulla e il tutto" (September 3, 2018 - September 5, 2018), San Pellegrino Terme.

- (September 11, 2018 - June 30, 2019) **Mathematics and Physics teacher** at Scuola d'Arte Applicata "A. Fantoni", Bergamo.

- (May 2018) **Osservatore esterno per la rilevazione degli apprendimenti del Sistema Nazionale di Valutazione** at Istituto Comprensivo "San Paolo D'Argon".

- (September 10, 2017 - June 30, 2018) **Mathematics teacher** at Scuola d'Arte Applicata "A. Fantoni", Bergamo.

- (June 19, 2017 - August 25, 2018) **Remedial courses in Mathematics and Physics** at Istituto di Istuzione superiore "G. Natta", Bergamo.

- (June 19, 2017 - July 5, 2017) **Remedial courses in Mathematics and Physics** at Liceo Scientifico "F. Lussana", Bergamo.

- (May 12, 2017 - June 29, 2017) **Mathematics and Science teacher** at Scuola secondaria di primo grado "S. Lucia", Bergamo.

- (November 22, 2016 - December 22, 2016) **Mathematics and Physics teacher** at Liceo delle scienze umane e Liceo musicale "P. Secco Suardo", Bergamo.

Languages

- Italian (Native language)

- English (Proficient)

- French (Conversant)

- Portuguese (Proficient) - level B1, exam DEPLE (10/01/2023)

Computer skills

- ECDL full

- Realization and management of simple web pages in WordPress

- Strong knowledge of MatLab and LaTeX system

- Intermediate knowledge of GAMS, AMPL and Python

- Basic knowledge of Stata and Julia Programming

Additional information

- **Fellow of the course "Ricerca Operativa"** (MAT/09). Department of Management, Information and Production Engineering, University of Bergamo. Academic years 2021/2022, 2023/2024, 2025/2026.

- **Fellow of the course "Operational Research"** (MAT/09). Faculty of Mathematical, Physical and Natural Sciences, Catholic University of the Sacred Heart of Brescia. Academic years 2023/2024, 2025/2026.

- **Fellow of the course "Optimization for Healthcare Problems"** (MAT/09). Department of Management, Information and Production Engineering, University of Bergamo. Academic year 2023/2024.

- **Fellow of the course "Statistica"** (SECS-S/01). Department of Management, University of Bergamo. Academic years 2019/2020, 2020/2021, 2021/2022.

- **Fellow of the course "Elementi di Matematica"** (SECS-S/06). Department of Management, University of Bergamo. Academic years 2020/2021, 2021/2022.

- **Fellow of the course "Analisi Matematica I"** (MAT/05). Department of Management, Information and Production Engineering, University of Bergamo. Academic years 2018/2019, 2019/2020, 2022/2023.

Bergamo, February 7, 2026