Personal Information

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Nationality: Italian
Date of Birth: 2 February 1995

Work Experience

Research Fellowship, Industrial Engineering

Period: 1 November 2024 – Present
Employer: University of Bologna, Department of Industrial Engineering
Main Activities and Responsibilities:
Conducting research on Net-Zero agri-food supply chain design
Developing optimization models to integrate land use, renewable energy, and carbon sequestration while balancing economic, social, and environmental trade-offs
Application across European food networks.

Ph.D. in Mechanics and Advanced Science Engineering

Title: **Decision-support systems for environmental- and social-driven planning and control of agri-food supply chain ecosystems**
Period: 1 November 2021 – 31 October 2024
Employer: University of Bologna, Department of Industrial Engineering
Main Research Topic:

- Development of optimization models to support decision-making in the agri-food supply chain at strategic, tactical, and operational levels, integrating various software tools and programming languages such as MS Access, MS Excel, SQL, AMPL, VBA, LabVIEW, MS Power Bi
- Development of supply chain digital twins capable of tracking the externalities of food orders from the field to the point of sale, measuring emissions, kilometers traveled, costs, energy, man-hours, water usage, and more.
- Application of decision support tools to benefit stakeholders in the agri-food system, including managers, sector operators, regulators, and institutional decision-makers.
- Implementation of decision support tools to inform consumers about the network externalities of the agri-food supply chain, promoting more conscious consumption choices.

Detailed Activities:

- **Research period abroad** at Arizona State University, Phoenix, USA. 02/2023 – 05/2023
- **European research project – Horizon2020** - Grant agreement no. 101060806
  R3PACK project: REDUCE, REUSE, RETHINK PACKAGING
- **National research project - PRIN 2022** - Grant agreement no. 2022YXXZH5
  NEXTCART project (Nutritional- and EXTernalities- driven food shopping CART)
- **Business project** - Consorzio della Bonifica Renana
  Developed and digitalized warehouse management for spare parts, introducing inventory management policies and an IoT system for remote access and maintenance activities.
- **Business project** – E80 Group
  Development of optimization models for the allocation of goods in highly automated warehouses, focusing on efficient stock management to maximize space utilization.
- **Organizational Committee** of the 6th International Conference on Food and Wine Supply Chain
  Held in Bologna, June 2022.

Research Fellowship, Industrial Engineering

Period: 1 November 2020 – 31 October 2021
Employer: University of Bologna, Department of Industrial Engineering
Main Activities and Responsibilities:

- Development of a **Digital Twin of agri-food logistics chains** for the quantification of the qualitative and environmental impacts of the network
  The project develops LabVIEW-based software to simulate agri-food supply chains from production to retail. It features a performance dashboard quantifying environmental, economic, and logistical impacts at both order and facility levels. A relational database stores inputs and outputs, defining network entities and parameters. The software calculates production yields to meet demand while tracking emissions, resource use, journey times, and food quality degradation.
- **Project with Camst group** - Redesign of a Regional network
  This project compared network configurations using performance dashboards for economic and logistical impact. SQL queries applied customer allocation criteria (e.g., proximity, customer type, production technology) to define and assess different production and distribution strategies.
- **Project with Camst group** - Study and planning of the national network
  The project enhances efficiency and coordination by identifying optimal network configurations and associated transformation costs. Operations research models optimize network structure, considering production capacity and logistics.
- **Monitoring of perishable products** during shipment to **Infia** S.r.l. and **Allegrini**
  Temperature and pressure conditions along national and international logistics routes were monitored using sensors on products and transport mediums. A Visual Basic interface processes sensor data, providing frequency analysis and time trends. These analyses support reports on package-product configurations and product quality degradation under sub-optimal conditions.

Education and Training

Ph.D. in Mechanics and Advanced Engineering Sciences
Institution: University of Bologna
Period: 11/2021 – 10/2024 (Discussion on 03/2025)
Key Areas: Planning and Control of Agri-Food Supply Chains, Optimization Modeling, Data Analysis, Digital Twins

Master's Degree in Management Engineering
Institution: University of Bologna
Period: 09/2018 – 10/2020

Bachelor's Degree in Management Engineering
Institution: University of Bologna
Period: 9/2015 – 07/2018

Skills & Other Experiences

Technical Skills
- Microsoft Office (Word, Excel, PowerPoint, Access, Visio, Project).
- Data Analysis: Microsoft Power BI, SQL, VBA.
- Optimization: AMPL
- Programming: Java, C++, C#, Python.
- Virtualization & Simulation: LabVIEW, Arena.

Languages
Italian: Native
English: IELTS 7.5 (Excellent reading, writing, and verbal skills)

Participation in International Conferences
- ISM 2024 - International Conference on Industry 4.0 and Smart Manufacturing. Prague, Czech Republic. 20-22 November 2024
- 9th Changeable, Agile, Reconfiurable and Virtual Production Conference. Bologna, Italy. 20-23 June 2023
- 11th World Mass Customization & Personalization Conference. Bologna, Italy. 20-23 June 2023
- XXVII Summer School "Francesco Turco". Sanremo, Italy. 7-9 September 2022
- 10th MIM 2022 - IFAC Conference - New challenges for management and control in the Industry 4.0 era. Nantes, Frace. 22-24 July 2022
- 6th International Conference on Food and Wine Supply Chain. 7-10 June 2022.
- ISL2021 International Symposium on Logistics 12-13 July 2021

Publications List

International Journal Publications

- Accorsi, R., Ferrari, E., **GUIDANI**, B., Manzini, R., Ronzoni M. (Under Review) An optimization framework for energy-driven food cold chain network design. Journal of Cleaner Production UNDER REVIEW
- Accorsi, R., Bartolotti, G., **GUIDANI**, B., Manzini, R., Ronzoni, M. (Under Review)'Fostering reusable food primary packaging in retail supply chain: A multi-objective optimization framework', Sustainable Production and Consumption, UNDER REVIEW
- **GUIDANI**, B., Accorsi, R., Manzini, R., Ronzoni, M. (2025) 'Monte Carlo-based instance generator for agri-food supply chain operations assessment', Procedia Computer Science, IN PRESS
- Bartolotti, G., **GUIDANI**, B., Ronzoni, M., Manzini R., Accorsi R. (2025) 'Data architecture framework for reverse logistics management in reusable food packaging networks', Procedia Computer Science, IN PRESS
- Accorsi, R., Ballotta, B., Bartolotti, G., Falasconi, L., **GUIDANI**, B., Manzini, R., Petroni, M. L., Ronzoni, M., Rula, A., Segrè A., Zanoni S. (2025) 'Data architecture framework for improving consumer awareness in food shopping experience', Procedia Computer Science, IN PRESS
- Lupi G., Accorsi R., Battarra I., **GUIDANI** B., Manzini R., Sirri G. (2025). Assignment Strategy and Lane Depth in Homogeneous Multi-deep Shuttle-based S/R Systems. Internation Journal of Production Research. IN PRESS
- **GUIDANI**, B., Ronzoni, M., Accorsi, R. (2024) 'Virtual Agri-Food Supply Chains: A digital twin for multi-dimensional sustainable food ecosystem design, control and transparency', Sustainable Production and Consumption 46, pp. 161-179 https://www.sciencedirect.com/science/article/pii/S2352550924000162
- Accorsi, R., Bortolini, M., Gamberi, M., **GUIDANI**, B., Manzini, R., Ronzoni, M. (2022) 'Simulating product-packaging conditions under environmental stresses in a food supply chain cyber-physical twin', Journal of Food Engineering 320, 110930. doi: 10.1016/j.jfoodeng.2021.110930. https://www.sciencedirect.com/science/article/pii/S0260877421004568
- Accorsi, R., Battarra, I., **GUIDANI**, B., Manzini, R., Ronzoni, M., Volpe, L. (2022) 'Augmented spatial LCA for reusable and recyclable food packaging networks comparison'. Journal of Cleaner Production 375, 134027 https://www.sciencedirect.com/science/article/pii/S0959652622035995
- **GUIDANI** B., Accorsi R., Manzini R., Ronzoni M. (2022) 'Post pandemic strategic planning of food catering production and distribution networks: A regional case study'. Transportation Research Procedia 67, pp. 46-55 https://www.sciencedirect.com/science/article/pii/S235214652200761X
- Accorsi, R., Cholette, S., **GUIDANI**, B., Manzini, R., Ronzoni, M. (2022) 'Sustainability assessment of transport operations in local Food Supply Chain networks', Transportation Research Procedia 67, pp. 1-11 https://www.sciencedirect.com/science/article/pii/S2352146522007761
- Ronzoni, M., Accorsi, R., **GUIDANI**, B., Manzini, R. (2022) 'Economic and environmental optimization of packaging containers choice in Food Catering Supply Chain' Transportation Research Procedia 67, pp. 163-171 https://www.sciencedirect.com/science/article/pii/S2352146522007748

Conference Publications

- **GUIDANI**, B., Accorsi, R., Lupi, G., Manzini, R., Ronzoni, M. (2022) 'An IoT-based maintenance framework for irrigation and drainage water management system at regional scale' IFAC-PapersOnLine 55(10), pp. 3070-3075 https://www.sciencedirect.com/science/article/pii/S2405896322022145
- **GUIDANI** B., Accorsi R., Manzini R., Ronzoni M. (2022) 'Redesign resilient production and distribution networks in the food catering industry'. Proceedings of the Summer School Francesco Turco https://cris.unibo.it/handle/11585/928494
- Ronzoni, M., Accorsi, R., **GUIDANI**, B., Manzini, R. (2022) 'Analysing reusable and disposable containers costs in food catering supply chain networks using optimization'. Proceedings of the Summer School Francesco Turco https://cris.unibo.it/handle/11585/928553
- Ronzoni, M., Accorsi, R., Battarra, I., **GUIDANI**, B., Manzini, R., Rubini, S. (2022) 'Optimizing food ordering in a multi-stage catering supply chain network using reusable containers'. IFAC-PapersOnLine 55(10), pp. 3196-3201 https://www.sciencedirect.com/science/article/pii/S2405896322022352
- Accorsi, R., Ferrari, E., **GUIDANI**, B., Manzini, R., Ronzoni, M (2022) 'Simulating food supply chain operation to drive sustainable consumers choices' ISL2022 https://isl22.org
- Accorsi, R., Ferrari, E., **GUIDANI**, B., Manzini, R., Ronzoni, M. (2021) 'Dynamic assessment of Food Supply Chain operations' impacts through a Digital twin platform' ISL2021 https://isl21.org

- Accorsi, R., **GUIDANI**, B., Gallo, A., Ferrari, E., Manzini, R. (2019) 'an operations-driven simulation platform for the assessment of fair supply chain costs and impacts' ISL2019 https://isl21.org/wurburg-2019-2-2/

Other Publications

- Accorsi, R., Bortolotti, G., **GUIDANI**, B., Ronzoni, M., Manzini, R. (2024) 'Sensitivity Analysis and Multi-Scenario Network Optimization with Guidelines about Risk Hotspots', R3Pack 3.5 Deliverable (EU Project, Grant Agreement No. 101060806) IN PRESS
- Accorsi, R., **GUIDANI**, B., Ronzoni, R., Manzini, R., Ferrari, E. (2023) 'Exploring strategies, technologies, and novel paradigms for sustainable agri-food supply chain ecosystems design and control', Sustainable Development and Pathways for Food Ecosystems, Academic Press, pp. 1-24 https://www.sciencedirect.com/science/article/abs/pii/B9780323908856000016
- Accorsi, R., **GUIDANI**, B., Ronzoni, M., Manzini, R. (2023) 'Decision-support model for reuse logistic network design', R3Pack 3.4 Deliverable (EU Project, Grant Agreement No. 101060806) https://www.r3pack.eu/_files/ugd/7e6472_8c6ed2c5a82d4ef1b34f77c1afa7bd60.pdf