

Alberto Bertoncini

Curriculum Vitae

Personal Information

SURNAME	BERTONCINI
NAME	ALBERTO
DATE OF BIRTH	07/03/1998

Current Position

Computer Science PhD Candidate in XLI cycle at University of Milano
Research on “Service orchestration in dynamic multi-layer heterogeneous mobile networks”

Brief description of RESEARCH ACTIVITY

Since 2024 he has been a research fellow at the CONNETS and OptLab laboratories of the Department of Computer Science “Giovanni degli Antoni” of the University of Milan. The main activities concerned:

- Design and development of simulation environments for the evaluation of deployment configurations of microservices in edge cloud environments;
- Modeling of microservice placement problems in the cloud-to-edge continuum;
- Formulation of placement problems through mathematical programming and heuristic algorithms.

In 2023 and 2024 he worked at Latitudo Srl as a Data Scientist, dealing with applied research projects and industrial development:

- Design, development and deployment of Machine Learning models for Agriculture 4.0
- Engineering and management of data pipelines (ETL) for industrial applications

His academic training, from 2017 to 2023, included research activities culminating in the following theses:

- Master's Thesis (2023): *“Enhancing sparse regression models with cutting planes”*, with development and analysis of techniques for enriching regression models through combinatorial optimization;
- Bachelor's Thesis (2020): *“Analysis of a logistics network for interlibrary loan with application and analysis of combinatorial optimization techniques for the VRP”*, with study and modeling of routing problems.

Education

Master's Degree in Computer Science (April 2023): grade 110/110 cum laude, obtained at the University of Milan.

Bachelor's Degree in Computer Science (December 2020): grade 106/110, obtained at the University of Milan.

High School Diploma in Computer Science (July 2017): grade 100/100 obtained at A. Cesaris Institute, Casalpusterlengo (LO), Italy.

RESEARCH CONTRACTS, FELLOWSHIPS OR EQUIVALENT

Postdoctoral Research Fellowship (type B) [from July 2024 to June 2025], at the Department of Computer Science "Giovanni Degli Antoni" of the University of Milan, within the PRIN-2022 project entitled "*CAVIA: enabling the Cloud-to-Autonomous-Vehicles continuum for future Industrial Applications*".

TEACHING ACTIVITY AT UNIVERSITY LEVEL IN ITALY OR ABROAD

Academic year 2024/2025: Course Coordinator of the module "Preparatory Sciences for Veterinary Medicine" in the single-cycle master's degree in Veterinary Medicine at the University of Milan.

Academic year 2024/2025: Exam Board Chair for the modules "Computer Science and Biostatistics", "Chemistry" and "Physics" for the joint exam of "Preparatory Sciences for Veterinary Medicine" in the single-cycle master's degree in Veterinary Medicine at the University of Milan.

Academic year 2024/2025: Lecturer of the module "Computer Science and Biostatistics" in the single-cycle master's degree in Veterinary Medicine at the University of Milan. (32 hours)

ACTIVITY AS SPEAKER AT NATIONAL AND INTERNATIONAL CONFERENCES

IEEE SmartComp 2025, June 16-20, 2025, Accepted: The 11th edition of the International Conference on Smart Computing. He will present as speaker the work: "Latency-Aware Placement of Microservices in the Cloud-to-Edge Continuum via Resource Scaling". University College Cork and Munster Technological University, Cork, Ireland.

ISC DSA 2025, June 19-20, 2025, Accepted: The 2nd edition of the International Summer Conference 2025 (ISC25) by Decision Science Alliance. He will present as speaker the work: "A Centrality-Based Resource-Aware Microservice Orchestration in Cloud-to-Edge Continuum". University of Catania, Sicily, Italy.

PARTICIPATION IN THE ORGANIZATION OF INTERNATIONAL CONFERENCES

Organizing and Scientific Committee: The International Conference on Optimization and Decision Science 2025. The Italian conference of the Operations Research Society entitled "Mathematics, algorithms and the art and science of decision-making"

Member of the TPC Abstract and short paper review: The International Conference on Optimization and Decision Science 2025, Milan, Italy, September 1-4, 2025.

Staff Member Alweek: European event dedicated to Artificial Intelligence, Milan, Italy, May 13-14, 2025.

PROJECT ACTIVITIES

Academic research activity

Research Fellow on PRIN project [from July 2024 to June 2025]: PRIN-2022 entitled "CAVIA: enabling the Cloud-to-Autonomous-Vehicles continuum for future Industrial Applications" (CUP: G53D23002850006) funded by the Italian Ministry of University and Research. Participation in the project as research fellow with the following objectives: i) Research of solutions for the joint optimization of computing and networking resources in the Cloud-to-Autonomous-Vehicles continuum; ii) Modeling of the joint optimization problem through the mathematical programming framework, investigating different objective functions balancing costs and benefits; iii) Design and development of algorithms for solving the optimization problem; iv) Performance evaluation by simulating some of the use cases envisaged by the project.

Master's Thesis [from August 2022 to April 2023]: "Experiments on cutting planes for the training of regression models", integrated approach for outlier detection, variable selection and training in Support Vector Regression (SVR) models, through Mixed Integer Programming (MIP) formulation. Several models and linearization techniques with generic cutting planes were analyzed and compared, evaluating their effectiveness on synthetic datasets in terms of predictive accuracy and resolution times, with benchmarking against ElasticNet.

Applied research activity in industrial context

At Latitudo Srl. [from April 2023 to June 2024]: "BigVite": activities of modeling, development and maintenance of a predictive ML system in the agronomic field. The developed system started from the collection and drafting of requirements in collaboration with the Catholic University of the Sacred Heart (Piacenza), as well as feasibility verification following

test companies. The subsequent implementation of the system included: i) automated data collection through Microsoft Azure services, cleaning and processing of the data obtained; ii) enrichment with derived indices iii) development, evaluation and integration of predictive ML models on the life cycle of plants; iv) development of reporting for clients.

At Latitudo Srl. [from April 2023 to June 2024]: “Analitica” : implementation of a data reconciliation system for advanced analysis by corporate stakeholders. The project I managed aimed at redefining the already implemented processing logic to optimize them, moving the processing to a Synapse environment with parallelization of operations through the distributed PySpark framework. The preliminary phases concerned: i) the study of the solution in use and the identification of bottlenecks, logical inconsistencies and lack of optimization of operations; ii) the revamping of the procedures led to a reduction in the time required to process all dimensions of analysis of client interest, and also to a more maintainable and manageable cloud solution.

At Latitudo Srl. [from April 2023 to June 2024]: “Online Learning Courses”: with the aim of optimizing the analysis of online learning courses, a system was developed for the collection, processing and reporting of data generated by students of the platform in question. The data collection mainly concerned the processing of KPIs for both system evaluation and their use for reporting, with the development of client reporting and related data model.

TRAINING COURSES

Participation School on Column Generation: The 5th edition of the School on Column Generation with aims of teaching the state-of-the-art in column generation and branch-and-price to advanced students and PhD students but also to practitioners and researchers interested. Lectures will be given by Guy Desaulniers, Jacques Desrosiers, Marco Lübbecke, Roberto Wolfler Calvo and Emiliano Traversi. 2025, Paris.

SCIENTIFIC PUBLICATIONS

International conferences with proceedings

1. Alberto Bertoncini, Alberto Ceselli, Christian Quadri: “Latency-Aware Placement of Microservices in the Cloud-to-Edge Continuum via Resource Scaling” *accepted for publication* in proceedings of 11th IEEE International Conference on Smart Computing, 2025, Cork, Ireland.
2. Alberto Bertoncini, Alberto Ceselli, Christian Quadri: “A Centrality-Based Resource-Aware Microservice Orchestration in Cloud-to-Edge Continuum” *accepted for publication* of 2nd edition of International Summer Conference 2025 (ISC25), Lecture Notes in Computer Science, 2025, Catania, Italy.

Abstract

1. Michele Barbato, Alberto Bertoncini, Alberto Ceselli: “Enhancing sparse regression models with cutting planes” abstract at International Conference on Optimization and Decision Sci-

ence (ODS) 2023, Ischia, Italy.

Date: _____01/06/2025_____

Place: _____Milan_____