

CV SUMMARY – MARCO GRIBAUDO

1. GENERAL INFORMATION

DATE OF BIRTH 27/04/1972

EDUCATION

- 2002 **PhD Degree** in Computer Science, Università di Torino, Italy.
1997 **Master of Science Degree** in Scienze dell'informazione (Informatica), Università di Torino, Italy (Final Grade 110 lode/110 + menzione d'onore, dignità di stampa).

CAREER

- 2021 – present **Associate Professor, SSD ING-INF/05**, Politecnico di Milano, Italy
2015 – 2021 **Associate Professor, SSD INF/01**, Politecnico di Milano, Italy
2010 – 2015 **Assistant Professor, SSD INF/01**, Politecnico di Milano, Italy
2001 – 2010 **Assistant Professor, SSD INF/01**, Università di Torino, Italy
1997 – 2001 **Ph.D. Student**, Università di Torino, Italy

NATIONAL HABILITATION

Type of habilitation	Country	SSD (if Italian habilitation) or topic area	Date of achievement
Full Professor	Italy	ING-INF/05	14/04/2021
Full Professor	Italy	INF/01	11/09/2019

RESEARCH INTERESTS

- **Research area1:** Virtual and Augmented Reality.
- **Research area2:** Performance Evaluation of Computer and Communication Systems.

2. QUALITY OF SCIENTIFIC AND/OR PROJECT PRODUCTION

PRODUCTIVITY AND IMPACT METRICS

- **Scientific Productivity: 205 publications (205 entries on Scopus, 188 co-authors according to Scopus):**
 - Author/Co-author of **17 top-ranked Scimago Q1** journal papers, out of which:
 - **5** as primary author (you have been the main developer of the scientific work and the paper) and **2** as research leader (you have been the work supervisor/Principal Investigator) in the **last 5 years**
 - **8** as primary author (you have been the main developer of the scientific work and the paper) and **4** as research leader (you have been the work supervisor/Principal Investigator) in the **last 10 years***[the figures in the previous rows refers only to Q1 journal papers; my total number of journal papers is 57]*
 - Author/Co-author of **127** scientific publications on peer-reviewed conferences, including **3** top-level **GGG A++/A+ Class 1** conferences, out of which:
 - **18** as primary author (you have been the main developer of the scientific work and the paper) and **7** as research leader (you have been the work supervisor/Principal Investigator) in the **last 5 years**
 - **45** as primary author (you have been the main developer of the scientific work and the paper) and **15** as research leader (you have been the work supervisor/Principal Investigator) in the **last 10 years**
 - Author/Co-author of **9 Journal** publications with co-authors who were students at the time of the paper writing
 - Author/Co-author of **12 Journal** publications with international co-authors
 - Author/Co-author of **4 Journal** publications with co-authors from Industry
- **Publication Impact:**
 - Based on Google Scholar: h-index **33**, i10- index **108**, number of citations **3747**
 - Based on Scopus: h-index **25**, number of citations **2067**, number of citations without self-citations by co-authors **1262**

In case of some significant discontinuities (such as one year without any publication), provide a motivation for this.

AWARDS AND RECOGNITIONS (SELECTION OF PAST 10-YEARS)

- 2023 Approved for a Full Professor Position in Computer Science, *RIF. O18CIII2022/1549/R22, University of Bologna*
- 2019 Best Paper Award at International Conference on Design Tools and Methods in Industrial Engineering (ADM 2019)
- 2017 Best Paper Award at European Conference on Modelling and Simulation (ECMS 2017)

INVITED TALKS AND SEMINARS (SELECTION OF PAST 10-YEARS)

- 2023 **Invited Talk** at Science and Ethics in AI: Challenges and Opportunities workshop, Brescia, Italy
- 2023 **Keynote Speaker** at 37th ECMS International Conference on Modelling and Simulation (ECMS 23), Firenze, Italy
- 2016 **Invited Talk** at CERN, Geneva, Switzerland
- 2014 **Invited Talk** at Dagstuhl, Germany

INSTITUTIONAL RESPONSIBILITIES (SELECTION OF PAST 10-YEARS)

- 2020 – present **Member** of the Institutional Committee for the selection of Integrative Teaching at DEIB - PoliMi
- 2020 – present **Member** of the Institutional Committee for the teaching assignments at DEIB - PoliMi
- 2017 – 2021 **Member** of the Scientific program board of international P.h.D. in “Cyber Physical Systems”, cycle XXXIII and XXXIV, for the University of Messina, Italy.
- 2023 – present **Member** of the Scientific program board of international P.h.D. in “Engineering”, cycle XXXIII and XXXIX, for the University of Messina, Italy.

ORGANIZATION OF SCIENTIFIC MEETINGS (SELECTION OF PAST 10-YEARS)

- 2024 **General Chair**, ValueTools, Milano (Italy) - ongoing
- 2020 **Program Chair**, QEST, Vienna (Austria)
- 2019 **General Chair**, EPEW, Milano (Italy)
- 2019 **Program Chair**, ASMTA, Moskow (Russia)
- 2019 **Program Chair**, ECMS, Caserta (Italy)
- 2015 **Program Chair**, ValueTools, Berlin (Germany)
- 2015 **General Chair**, ASMTA, Varna (Bulgaria)

PARTICIPATION TO EDITORIAL BOARDS (SELECTION OF PAST 10-YEARS)

- 2018 – present **Associate Editor** of Journal of High Speed Networks

COMMISSIONS OF TRUST (SELECTION OF PAST 10-YEARS)

- 2021 **Expert Reviewer**, for the Swiss National Science Foundation
- 2019 **Expert Reviewer**, for the Cariplo Bank for the University of Cagliari (Italy)
- 2018 – 2019 **Expert Reviewer**, for the “TAR del Lazio”, Italy
- 2023 **Participation in the recruitment committee** at Politecnico di Milano (Italy), as Head Member for the selection of an RTD-A (temporary junior assistant professor), SSD: ING-INF/05
- 2021 **Participation in the recruitment committee** at University of Torino (Italy), as a Member for the selection of an RTD-A (temporary junior assistant professor), SSD: INF/01
- 2021 **Participation in the recruitment committee** at Politecnico di Milano (Italy), for the candidates at the XXXVII cycle of the PhD in Information Technology.
- 2023 **Participation in the recruitment committee** at the Municipality of Nova Milanese (Italy), for the selection of an IT technician.

3. TEACHING ACTIVITIES**COURSES WITH A PRIMARY ROLE (PAST 10-YEARS)**

Institution name	Course name	Credits	No. of students	Reference Course	Study period	Students Evaluation
POLIMI	Computer Graphics	5	150	CSE	2014/15-2023/24	High
POLIMI	Performance Evaluation and Applications	5	100	CSE	2021/22-2023/24	High
POLIMI	Computer System Performance	5	80	CSE	2017/18 – 2020/21	High

	Evaluation					
POLIMI	Performance Evaluation of Computer Systems	5	30	CSE (Como)	2014/15-2018/19	High
POLIMI	Computing Infrastructures	5	150	CSE	2014/15-2016/17	High
POLIMI	Tecniche della rappresentazione	4	50	Design	2017/18-2023/24	High
POLIMI	Digital Interactive Technologies for Physical Interfaces	3	50	Design	2018/19-2021/22	High

OTHER EDUCATIONAL ACTIVITIES WHERE YOU HAD A PRIMARY ROLE (PAST 10-YEARS)

2018 TUTORIAL, “*MODELLING WITH MARKOVIAN AGENTS*”, IN INTERNATIONAL CONFERENCE ON PERFORMANCE ENGINEERING (ICPE 2018), BERLIN, GERMANY

SUPERVISION OF MASTER, DOCTORAL STUDENTS AND POSTDOCTORAL RESEARCHERS

Last 5 years: **Advisor/Co-advisor** of **1** Ph.D. Students at Politecnico di Milano (Erica Stella)

Last 10 years: **Advisor/Co-advisor** of **2** Ph.D. Students at Politecnico di Milano (Erica Stella and Riccardo Pincioli).

Last 15 years: **Advisor/Co-advisor** of **5** Ph.D. Students at Politecnico di Milano and Università di Torino (the one above, plus Pietro Piazzolla, Davide Cerotti and Enrico Bariberato), and **4** Postdoctoral Students at Politecnico di Milano (Pietro Piazzolla, Davide Cerotti, Enrico Bariberato and Levente Bodrog).

2012 – present **Opponent Member** of **3 International** Doctoral Examination Committees at at the Imperial College – London, UK; at UTC - Compiegne University of Technology, Sorbonne Universities, France; and at University of Twente, Enschede, The Netherlands.

2006 – present **Advisor** of **more than 200** Master Students in different degrees, both at Politecnico di Milano and University of Torino.

4. SCIENTIFIC RESPONSIBILITY FOR FUNDED RESEARCH PROJECTS

LEADERSHIP IN COMPETITIVE RESEARCH PROJECTS

Project Acronym	Time Period	Funding Institution	Funding Scheme	Role of the applicant	Budget for the applicant's institution
Job Duration Prediction (Innovation Grant)	10-2023 / 4-2025	PNRR	PNRR	Project Coordinator	59 K
FP-3 - CN1 Spoke 1 - Future HPC - Workflows, I/O and HPC cloud convergence	10-2022 / 10-2025	PNRR	PNRR	Task Leader	-
HBD – WP5	10-2019 / 10-2029	Italian Ministry	Other	WP Leader	1M

LEADERSHIP IN INDUSTRIAL-FUNDED RESEARCH PROJECTS

Project Acronym	Time Period	Funding Company	Role of the applicant	Budget for the applicant's institution
MultiPlatfEngine	06-2012/ 12-2013	Reply S.P.A.	Project Leader	320.000 Euro

5. TECHNOLOGY TRANSFER ACTIVITY

DEVELOPMENT OF PRODUCTS/ OPEN-SOURCE TOOLS / APPLICATIONS / SYSTEMS /SERVICES

2015- present JMT – Java Modelling Tools – The tool has more 90000 downloads from all over the world. I cooperated to its development thorough a series of master thesis and theoretical support.
<https://jmt.sourceforge.net/>

2007-present DrawNET – a tool to support multiformalism models. I am the main author and maintainer. The tool had a long period of inactivity, in the years 2012-2023. Recently, I have restarted the project, and disclosed a new version.
www.draw-net.com

6. TWELVE MOST RELEVANT PUBLICATIONS

- 2021 - BARBIERATO E., CAMPANILE L., GRIBAUDO M., IACONO M., MASTROIANNI M., NACCHIA S.: "PERFORMANCE EVALUATION FOR THE DESIGN OF A HYBRID CLOUD BASED DISTANCE SYNCHRONOUS AND ASYNCHRONOUS LEARNING ARCHITECTURE". IN: SIMULATION MODELLING PRACTICE AND THEORY, VOLUME 109, MAY 2021, 102303. **RANKING: Q1.** 5 CITATIONS AS 12/3/2024
- 2020 - ANTONELLI F., CORTELLESA V., GRIBAUDO M., PINCIROLI R., TRIVEDI K.S., TRUBIANI C.: "ANALYTICAL MODELING OF PERFORMANCE INDICES UNDER EPISTEMIC UNCERTAINTY APPLIED TO CLOUD COMPUTING SYSTEMS". IN: FUTURE GENERATION COMPUTER SYSTEMS, VOLUME 102, PG. 746-761. **RANKING: Q1.** 16 CITATIONS AS 12/3/2024
- 2020 - GRIBAUDO M., PIAZZOLLA P., PORPIGLIA F., VEZZETTI E., VIOLANTE M.G.: "3D AUGMENTATION OF THE SURGICAL VIDEO STREAM: TOWARD A MODULAR APPROACH". IN: COMPUTER METHODS AND PROGRAMS IN BIOMEDICINE, VOLUME 191, JULY 2020, 105505. **RANKING: Q1.** 13 CITATIONS AS 12/3/2024
- 2019 - BARBIERATO E., GRIBAUDO M., IACONO M., JAKÓBIK A.: "EXPLOITING CLOUDSIM IN A MULTIFORMALISM MODELING APPROACH FOR CLOUD BASED SYSTEMS". IN: SIMULATION MODELLING PRACTICE AND THEORY, VOLUME 93, PG. 133-147. **RANKING: Q2.** 32 CITATIONS AS 12/3/2024
- 2018 - GRIBAUDO M., IACONO M., KIRAN M.: "A PERFORMANCE MODELING FRAMEWORK FOR LAMBDA ARCHITECTURE BASED APPLICATIONS". IN: FUTURE GENERATION COMPUTER SYSTEMS, VOLUME 86, PG. 1032-1041. **RANKING: Q1.** 21 CITATIONS AS 12/3/2024
- 2016 - GRIBAUDO M., IACONO M., MANINI D.: "IMPROVING RELIABILITY AND PERFORMANCES IN LARGE SCALE DISTRIBUTED APPLICATIONS WITH ERASURE CODES AND REPLICATION". IN: FUTURE GENERATION COMPUTER SYSTEMS, VOLUME 56, PG. 773-782. **RANKING: Q1.** 22 CITATIONS AS 12/3/2024
- 2016 - GRIBAUDO M., REMKE A.: "HYBRID PETRI NETS WITH GENERAL ONE-SHOT TRANSITIONS". IN: PERFORMANCE EVALUATION, VOLUME 105, PG. 22-50. **RANKING: Q2.** 26 CITATIONS AS 12/3/2024
- 2014 - CASTIGLIONE A., GRIBAUDO M., IACONO M., PALMIERI F.: "EXPLOITING MEAN FIELD ANALYSIS TO MODEL PERFORMANCES OF BIG DATA ARCHITECTURES". IN: FUTURE GENERATION COMPUTER SYSTEMS, VOLUME. 37, PG. 203-211. **RANKING: Q1.** 55 CITATIONS AS 12/3/2024
- 2014 - BARBIERATO E., GRIBAUDO M., IACONO M.: "PERFORMANCE EVALUATION OF NOSQL BIG-DATA APPLICATIONS USING MULTIFORMALISM MODELS". IN: FUTURE GENERATION COMPUTER SYSTEMS, VOLUME 37, PG. 345-353. **RANKING: Q1.** 95 CITATIONS AS 12/3/2024
- 2014 - CEROTTI D., GRIBAUDO M., BOBBIO A.: "MARKOVIAN AGENTS MODELS FOR WIRELESS SENSOR NETWORKS DEPLOYED IN ENVIRONMENTAL PROTECTION". IN: RELIABILITY ENGINEERING AND SYSTEM SAFETY, VOLUME 130, PG. 149-158. **RANKING: Q1.** 15 CITATIONS AS 12/3/2024
- 2012 - IACONO M., BARBIERATO E., GRIBAUDO M.: "THE SIMTHESYS MULTIFORMALISM MODELING FRAMEWORK". IN: COMPUTERS AND MATHEMATICS WITH APPLICATIONS, VOLUME 64, ISSUE 12, PG. 3828-3839. **RANKING: Q1.** 26 CITATIONS AS 12/3/2024
- 2011 - GRIBAUDO M., MANINI D., NORDIO A., CHIASSERINI C.-F.: "TRANSIENT ANALYSIS OF IEEE 802.15.4 SENSOR NETWORKS". IN: IEEE TRANSACTIONS ON WIRELESS COMMUNICATIONS, VOLUME 10, ISSUE 4, PG. 1165-1175. **RANKING: Q1.** 17 CITATIONS AS 12/3/2024



Marco Gribaudo, 03/2024

Curriculum Vitae

Personal information:

Marco Gribaudo,

Born in **Torino (Italy)** on **27/4/1972**

Personal Identification Code: **GRBMRC72D27L219H**

Department: Dipartimento di Elettronica, Informazione e Bioingegneria,
Politecnico di Milano (*Milan - Italy*)

Via Ponzio, 34/5 – 20133 Milano - Italy

Courses: Performance Evaluation and Applications,

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Home Address: xxx – 201xx Milano - Italy

Current status: Associated Professor in Computer Engineering

Summary

I am an Associate Professor at Politecnico di Milano since 14/7/2015. I obtained, on 14/04/2021, the habilitation to Full Professor for the SSD ING-INF/05 (09-H1, Computer Engineering), and the one for the SSD INF/01 (01-B1, Computer Science) on 11/09/2019. Since 2013, when Prof. Giuseppe Serazzi retired, I am responsible of the Analytical techniques and Tools for performance evaluation and optimization activities of the System Architecture research line of Dipartimento di Elettronica, Informazione e Bioingegneria. I obtained my master's degree in Computer Science in 1997 (MS) and the Ph.D. in Computer Science in 2001 at the University of Torino, I have been an Assistant Professor (researcher) in Computer Science (SSD INF/01) from 1/11/2001 to 28/2/2010 at the University of Turin, and from 1/3/2010 to 13/7/2015 at the Politecnico di Milano. On 14/7/2015 I was promoted to the Associate Professor position at Politecnico of Milan, first in Computer Science (INF/01), and on 1/9/2021 I changed my SDD to ING-ING/05 (Computer Engineering) to better integrate with my department. My research activities can be divided in two areas: Performance Evaluation of Computing Infrastructures, and Virtual and Augmented reality. The former focuses on the performance evaluation and optimization of parallel and distributed computing systems and communication networks using advanced modeling techniques such as multi-formalism models (Queuing Networks with Petri Nets) and multi-class queuing networks, Markovian Agents, mean field approximations and fluid models. The main goal of modelling, is optimizing important parameters like throughput, response time, energy consumption and green efficiency. I support the development of software tools to define, analyze and evaluate performance models, such as the Java Modelling Tool (JMT) developed by both Politecnico di Milano and Imperial College London. For what concerns Virtual and Augmented Reality, my focus is on immersive learning and computer aided medicine. In particular, my work focuses on supporting the training of skills such as Laparoscopy and Echography, and to assist minimally invasive robotic surgery operations with Virtual and Augmented Reality techniques.

Indices and numbers:

Papers - I am author of **2** books, **57** journal papers and **127** international conference papers – all indexed on the main scientific web resources.

Talks - I presented **10** invited talks (including **2** keynote speeches at mainstream conferences), **4** tutorials and I obtained **3** best-paper awards.

Committees - I served as a member for *around* **50** scientific committees of international conferences, and as a reviewer for

international journals, and *about* 20 Ph.D. candidates' evaluation boards.

Projects - I was the principal scientific investigator of 1 industrial project, worth 322k Euro. I have led a key work package in 2 large Italian projects. I took part in 7 national and international projects. I have directed 1 self-funded project.

Teaching - I have been in charge for 23 years of university courses on different subjects, at the BS, MS, Master and PhD level. Lectures have been given both in Italian and English. I have given 4 courses in international Universities. I have tutored *more than* 250 Theses, both at the BS and MS level. I have been co-advisor of 3 Ph.D. dissertations, and the main advisor of 1 Ph.D. dissertation.

Metrics:

2062 citations from 1424 documents, *H-index* = 25 (20 excluding self-citations) and 205 works indexed on Scopus, with 188 co-authors and spanning over 31 topics. The percentage of works with international cooperation is 26.3%, the percentage of documents in the top 25% cited documents worldwide is 18.6%, and the percentage of documents in the top 25% journals is 22.4%. These figures have been verified in *Scopus on March 12th, 2024*.

Publications:

I am author of 57 international journal publications, 127 international conference publications, 11 book chapters, 8 editorial contributions, and 2 books. Most of my works are indexed on *Scopus*, *Web Of Science* and *DBLP*, and they can be downloaded from *IEEEExplore*, *ACM digital library*, *SpringerLink*, *Science Direct* or other reputable on-line repositories.

My current list of publications is included in the Appendix A of this document.

Education

MS in Computer Science on 25/3/1997, from the University of Turin – Italy, with a score of 110/110, *summa cum laude*, honorary mention, and publication. Thesis title: “*Queuing Network with Blocking: qualitative and quantitative analysis techniques*”. The advisors were Prof. Gianfranco Balbo and Prof. Matteo Sereno (from the University of Turin) and the reviewer was Prof. Carla Simone (from the University of Milan). The thesis received the “Best thesis of the year” in Computer Science award.

Ph.D. in Computer Science on 15/2/2002, from the University of Turin. Thesis title: “*Hybrid formalism for performance evaluation*”, advisors: Prof. Gianfranco Balbo and Matteo Sereno.

Research activities

On 1/11/2001, I obtained the position of Assistant Professor (Researcher) in Computer Science (INF/01) from the faculty of “*Scienze della Formazione*” (Arts and Teaching Faculty) of the University of Turin (Italy) after a public competition won in September 2001. In November 2005 the position has been confirmed, becoming a Senior Researcher.

On 1/3/2010, I moved to the Department of “*Elettronica, Informazione e Bioingegneria*” of the Politecnico of Milano, as an Assistant Professor (Researcher) in Computer Science (INF/01).

On 13/07/2015 I become Associate Professor of Computer Science (INF/01) in the Department of “*Elettronica, Informazione e Bioingegneria*” of the Politecnico of Milano.

On 1/09/2021 I changed my SSD to ING-INF/05 to better integrate in the department.

The main topics of my ongoing research activity are:

Performance analysis of advanced computing infrastructures including Data Lakes, Big Data applications, cloud environments and multi-core systems: application of performance evaluation techniques, ranging from multi-class queuing networks to mean field analyses, to study the performance of complex, hexa-scale systems. Accurate measurement on the real systems, are used to validate the proposed models. In particular I focus on determining the optimal number of nodes in Big Data applications, defining intelligent load balancing strategies to optimize the utilization in IaaS cloud infrastructures, reducing the energy consumption and the impact on the environment, and I study the efficiency of multi-core processors to execute multi-threaded workloads.

Multi-formalism Modelling and Tools for performance evaluation: I work on improving the Multi-formalism aspects of the Java Modelling Tool, to better support the integration of Queuing Networks and Petri nets. My experience comes from the definition of the SIMTHEsys framework for the rapid prototyping of multi-formalism models. This allows defining both the syntax and the semantics of elements that a modeler can use to describe a system. I also support the development of the Software Tool “*DrawNET*” - a framework to support the composition of performance evaluation models and formalisms. In particular, I worked on a new object-oriented methodology to develop models in multi-formalism, multi-solution environment. These methodologies have been supported by the development of a generic graphical user interface (GUI), an abstract data definition language (DDL), and a set of access libraries, written in Java language, and based on XML technology.

Enhanced surgical operation: tracking of human organs, and matching 3D models obtained from CT images to video live stream of the ongoing operation, with the goal of helping the surgeon in search, operate and later reconstruct the area. These applications exploit both Computer Vision and Artificial Intelligence based solutions. In particular, current research focuses on the prostate, kidney and lungs. This research line also focuses on the simulation of the deflation of the lung to match the operation state of the organ with the one of the CT scans.

Virtual and Augmented Reality for learning: study of low-cost solutions to visualize and enhance vision of 3D generated images, with complex human interaction patterns. Applications have been investigated in advanced training, rescue operations, fashion industry, and minimal invasive surgery. In particular, current research focuses on simulation of laparoscopy and echography using low cost VR head mount display-based solutions.

Energy optimization of computing infrastructures: study of the energy consumption of large-scale datacenters. My goal is to analyze the power consumption of the components of a single node (i.e. CPU, storage, network) under different workloads, and how they change due to the effects of virtualization and of the introduction in a cloud infrastructure. In particular I focus on the definition of workload distribution optimization techniques, and on the study of their performances using Multi-Class Queuing Networks and Petri Networks. Recent trends in this topic concern considering renewable sources and heterogeneous architectures, to find best tradeoff between performance and impact on the environment.

Electric Mobility: I am currently applying Performance Evaluation methodologies to study the battery level evolution in passenger cars. The aim is to support the development of integrated platforms that helps in reducing delay due to battery recharge in passenger cars to allow the technology being used also in mid length travels.

Fluid and Hybrid Performance Evaluation Models: study of numerical and analytical techniques to evaluate the performance of complex systems, using performance models described by mixed continuous and discrete components. In particular, I started by extending the formalism of the Fluid Stochastic Petri Nets introduced by Trivedi and Kulkarni, adding new features and studying new solution techniques to compute both transient and steady state performance indices. Other investigations considered the efficient solution of Hybrid Bounded Fluid Models of the first and second order.

Markovian Agents and Mean Field Analysis: both Markovian Agents and mean field analysis are analytical solution techniques that can be used to study systems characterized by a number of entities that tends to the infinity. The former considers objects (agents) spread over a space that communicate using messages, while the latter considers objects that interact in way dependent on the total state of the system. Both techniques share a common mathematical foundation, and can be successfully employed to approximate systems composed by a large number of interacting objects, such as sensor networks, or for simulating the physical properties of the materials.

Topics of my past research activity, that are currently only partially investigated, include:

Analysis of Computer Networks: I focus on the study of mobile telephone networks, “Peer-to-Peer” (P2P) systems, sensors and ad-hoc networks. Several analytical techniques (mainly based on fluid and hybrid performance evaluation models) have been developed and applied to various kinds of communication networks. In particular they have been used to study mobile phone networks (GPRS), the TCP/IP protocol and web services. Peer-to-Peer systems have been studied for what concern the ability to locate a particular resource, and the time required to download it. Most recent studies concern the development of spatial fluid models to optimize the energy consumption in sensor networks, and the study of efficient broadcast protocols in vehicular networks.

Queuing network with blocking: study of solution technique for finite capacity queuing systems. In particular I developed special solution algorithms based on the translation of a queuing network with blocking into a Generalized Stochastic Petri Nets

VR and E-learning: study and development of a platform to create virtual reality based, e-learning shared applications based on low-cost technologies. In particular, simple and common web technologies (like Javascript and PhP) have been integrated with Virtual Reality applications (such as Adobe Atmosphere in the beginning then Unreal Technology), to recreate a Virtual Reality environment in which implement cooperative exercise to support the other common learning activities. Particular interest has been focused in Edutainment and serious gaming.

Performance evaluation of Multimedia systems: applications to the study of multimedia production systems, focusing on cinema and television productions. Analysis of the integrated content development systems, considering economic factors, and using classical performance evaluation techniques such as Petri Nets and probabilistic models

National and International cooperation:

I have visited several universities and I have been involved in many international cooperation. The most important are: The **Technical University of Budapest (Hungary)**, the Department of Robotics of the **Technical University of Berlin (Germany)**, the **University “Federico Secondo” in Naples (Italy)**, the Laboratory for Foundations of Computer Science of the **University of Edinburgh**, the **Arizona State University** (Tempe – Az, USA), and the **University of Twente** (Enschede, The Netherlands). I have also given a seminar on optimization of computing infrastructure at **CERN** (Geneve, Switzerland). In October 2017, May 2018 and October 2019, I have visited the **People Friendship University of Moscow**. This cooperation has been interrupted due to the geopolitical situation. From January 20th to February 1st I visited the **University of Tsukuba**, Japan, to start a new international cooperation.

Projects and grants:

I am currently the principal investigator of the **WG5 – Infrastructure component**, of the **Health Big Data** project, founded by the Italian Ministry of Economy and Finance, involving *51 IRCCS* and coordinated by the Ministry of Health. The project started in 2019, and has a 10-year development plan.

I am currently the leader for Politecnico di Milano of the **Flagship 3 on Workflows, I/O and HPC cloud convergence**, of the **PNRR CN1 Spoke 1 Future HPC**

I am the principal investigation of the “Job Duration Prediction” Innovation Grant of the PNRR CN1 Spoke 1, a 59K Euro grants, together with **ENI** as the industrial partner.

I have coordinated the Industrial project with the Consultant, Systems Integration e Application Management Company **Reply S.P.A.** The project was initially planned to last 6 months, but it was later extended to a total of 18 months. In this

project, I was the coordinator and the principal investigator. The budget of the project was 322K Euro, with which I was able to support 6 post-doc positions during three years, and several other research associates to create high-performance open-source multi-platform game development libraries.

Project “DrawNET”, a self-funded and coordinated research project, for the creation of a tool for the design and solution of models of complex systems. That project took advantage of several resources funded from other research projects that used the tool (PRIN, DePauDe, Crutial)

I took part to the following projects:

EU-Brasil BigSea project - working on fluid models of parallel computation paradigms, and supporting a P.h.D. of my group.

Antarex EU Project - working on fluid models of HPC systems, and supporting a P.h.D. of my group.

Italian project “WiSe DeMon : Affidabilità e qualità del servizio in sistemi di monitoraggio basati su *Wireless Sensor Networks per applicazioni critiche*” (Reliability and service quality in critical application monitoring systems based on Wireless Sensor Networks), Italian ministry **PRIN**, years 2007-2008.

Italian Project ENEA-DI “*Metodi, strumenti e modelli probabilistici per l'analisi della dependability e della survivability di sistemi digitali basati su reti di telecomunicazione*” (Methods, tools and probabilistic models for the survivability and dependability analysis of communication network based digital systems), year 2004.

Italian project “*Performance Evaluation of Complex Systems: Techniques, Methodologies and Tools (Perf)*”, from **MIUR-FIRB**, years 2002-2005.

Italian project “*Planet-IP (Planning IP networks)*”, from the Italian ministry **MURST**, years 2001-2002.

Italian project ENEA-DISTA “*Modelli e strumenti per l'analisi di affidabilità, sicurezza di funzionamento e prestazioni di sistemi elettronici programmabili complessi ad alta criticità con particolare riferimento al sistema di controllo della turbina a gas dell'impianto di cogenerazione ICARO*” (Models and tools for the reliability, operational safety, and performance analysis of complex critical system, focusing on the gas turbine ICARO), years 2000-2001

Tools and Open Source software development support

Principal maintainer of the *DrawNET tool*, to support the development of multi-formalism models.

Web page: <http://www.draw-net.com>

Involved in the development of the Java Modelling Tools, a suite to describe systems using Queueing Networks and Petri Net models. Web page: <https://jmt.sourceforge.net/>

Committees:

- **HEAD MEMBER in 1 committee** for the selection of a candidate applying to an **RTD-A** (temporary junior assistant professor), in computer engineering (**SSD ING-INF/05, 09-H1**) position at the Politecnico of Milano (2023).

- **1 committee** for the selection of a candidate applying to an **RTD-A** (temporary junior assistant professor), in computer science (**SSD INF/01, 01-B1**) position at the University of Torino (2021).

- **1 committee** for the selection of a the candidates for XXXVII cycle of the PhD in Information Technology – Politecnico di Milano (2021).
- **2 committees** for the selection of a candidate applying to an assistant professor positions at the University of Catania.
- About **15 PhD** national defense committees at Politecnico of Milano, University of Torino, Politecnico of Torino, University of Bologna, University of Messina, University of Venezia.
- **3 international Ph.D.** committees, respectively at the **Imperial College** – London, UK; at **UTC - Compiegne University of Technology**, Sorbonne Universities, France; and at **University of Twente**, Enschede, The Netherlands.

Institutional committees

- Institutional Committee for the selection of Integrative Teaching assignments, for the courses organized at DEIB – PoliMi, since 2020
- Institutional Committee for the assignment of Teaching activities for the courses organized at DEIB – PoliMi, since 2020

Chair positions in international conferences

[Ongoing] General Chair and main organizer of the of the *EAI International Conference on Performance Evaluation Methodologies and Tools* (ValueTools 2024), Politecnico di Milano, Italy, Dates still to be announced.

Main Organizer of *QualTTA 2022*, the main meeting event for the Performance Evaluation community in Italy, in November 25rd, 2022, at Politecnico di Milano. The meeting hosted about 50 researchers from both the Industry and the University, coming from all around Italy.

Program Chair for the *International Conference on Quantitative Evaluation of SysTems* (QEST 2020), that took place in Vienna, Austria on August 31st-September 3rd, 2020.

General Chair and main organizer of the *European Performance Engineering Workshop* (EPEW 2019), that took place in my institution, Politecnico di Milano, Italy, November 28th-29th, 2019. Also, **local chair** of PASM 2019 – International Workshop on Practical Applications of Stochastic Modelling).

General Chair of the *International Conference on Analytical and Stochastic Modelling Techniques and Applications* (ASMTA 2019), that took place in Moskow, Russia on October 23th-25th, 2019.

Program Chair of the *European Conference on Modelling and Simulation* (ECMS 2019), June 11th-14th, 2019. Caserta, Italy.

Main Organizer of *InfQ 2018*, the main meeting event for the Performance Evaluation community in Italy, in November 23rd, 2018, at Politecnico di Milano. The meeting hosted about 50 researchers from both the Industry and the University, coming from all around Italy.

Program Chair of the *EAI International Conference on Performance Evaluation Methodologies and Tools* (ValueTools 2015). December 14–16, 2015. Berlin, Germany

General Chair of *International Conference on Analytical and Stochastic Modelling Techniques and Applications* (ASMTA 2015), that took place in Varna, Bulgaria on May 26th-29th, 2015 (co-located with ECMS 2015 – European Conference on Modelling and Simulation).

General Co-chair of the first two editions of the *Workshop on Research and Use of Multiformalism Modeling Methods* (WRUMMM). The first edition was co-located with QEST 2012 (International Conference on Quantitative Evaluation of SysTems), September 17-20, 2012 – London, UK. The second edition was co-located with ECMS 2014 (European Conference on Modelling and Simulation), May 27-30, Brescia, Italy.

Tool Chair position on the *International Conference on Quantitative Evaluation of SysTems* (QEST), which took place in Budapest, Hungary, on September 13th-16th, 2009.

Program Committees in international conferences

Quantitative Evaluation of SysTems (QEST)

- 2023: September 18-23, Antwerp, Belgium
- 2022: September 12-16, Warsaw, Poland
- 2021: August 23-27, Paris, France (on-line only)
- 2020: August 31-September 3, Vienna, Austria (on-line only)
- 2019: September 10-12, Glasgow, UK

Queuing Theory with Network Applications (QTNA)

- 2019: August 27-29, Ghent, Belgium

International Conference on Analytical and Stochastic Modelling Techniques and Applications (ASMTA)

- 2023: June 20-23, Firenze, Italy
- 2021: December 13-14, Tsukuba, Japan (on-line only)
- 2019: October 21-25, Moskow, Russia
- 2017: June 10-12, Newcastle upon Tyne, UK
- 2016: August 24-26, Cardiff, UK
- 2014: June 30-July 2, Budapest, Hungary
- 2013: July 8-10, Ghent, Belgium
- 2012: June 4-6, Grenoble, France
- 2011: June 20-22, Venice, Italy
- 2010: June 14-16, Cardiff, UK
- 2009: June 9-12, Madrid, Spain
- 2008: June 4-6, Nicosia, Cyprus.

International Conference on Performance Evaluation Methodologies and Tools (ValueTools)

- 2023: September 6-8, Crete, Greece
- 2019: March 13-15, Palma, Spain
- 2017: December 5-7, Venice, Italy
- 2016: October 25-28, Taormina, Italy
- 2014: December, 9-11, Bratislava, Slovakia
- 2013: December, 10-12, Torino, Italy
- 2011: May 16-20, Cachan, France
- 2009: October 20-22, Pisa, Italy
- 2008: October 20-24, Athens, Greece.

International Workshop on Practical Applications of Stochastic Modelling (PASM)

- 2022: September 23, Alicante, Spain
- 2019: November 28, Milano, Italy
- 2017: September 9, Berlin, Germany
- 2016: April 5, Munster, Germany
- 2014: May 13, Newcastle, UK
- 2013: September 17, London, UK
- 2011: March 17, Karlsruhe, Germany
- 2009: September 24, London, UK
- 2008: September 23, Palma de Mallorca, Spain

International Conference on Simulation Tools and Techniques (SimuTools)

- 2014: March 17-19, Lisbon, Portugal
- 2013: March 5-6, Cannes, France
- 2012: March 19-23, Desenzano, Italy
- 2011: March 21-25, Barcelona, Spain

International Conference on High Performance Computing and Communications

- 2014: August 20-22, Paris, France

International Symposium on Modelling, Analysis and Simulation of Computer and Telecommunication Systems (MASCOTS)

- 2012: August 7-9, Washington
- 2011: July 25-27, Singapore
- 2010: August 17-19, Miami (FL), USA
- 2009: September 21-23, London UK

European Performance Engineering Workshop (EPEW)

- 2023: June 20-23, Firenze, Italy
- 2022: September 21-23, Alicante, Spain
- 2021: December 9-10, Tsukuba, Japan (on-line only)
- 2011: October 12-13, Borrowdale, UK
- 2009: July 9-10, London, UK

Dependable Control of Discrete System (DCDS)

- 2011: June 15-18, Saarbrücken, Germany
- 2009: June 10-12, Bari, Italy

International Workshop on Ambient Intelligence, Media, and Sensing (AIMS)

- 2007: April 20th, 2007, Istanbul, Turkey

Invited Papers and Keynote speeches

31/10/2023: M. Gribaudo, “Performance modelling of Green-IT applications using continuous and multi formalism-techniques”, Presented during the “Science and Ethics in AI: Challenges and Opportunities” workshop, Brescia, Italy.

23/6/2023: **Keynote Speech at a major conference** - M. Gribaudo, “20+ Years of Multi-formalism Models by Examples”, Presented to *the 37th ECMS International Conference on Modelling and Simulation (ECMS 23)*, Firenze, Italy.

2/8/2016: M. Gribaudo, “Markovian Agents and Mean-Field modeling of modern datacenter infrastructures and workloads”, CERN, (Geneve, Switzerland)

14/12/2014: M. Gribaudo, “Discrete Time Markovian Agents” Dagstuhl seminar on “Collective Adaptive Systems: Qualitative and Quantitative Modelling and Analysis” (Dagstuhl, Germany)

16/1/2014: M. Gribaudo, M. Iacono, “Multiformalism to support software rejuvenation modeling” Dagstuhl seminar on “Randomized Timed and Hybrid Models for Critical Infrastructures” (Dagstuhl, Germany)

8/3/2010: M. Gribaudo, “Mean field analysis” ROCKS meeting, Nijmegen, The Netherlands.

10/7/2009: **Keynote speech at a major conference** - M. Gribaudo, “*Analysis of Large Systems with Mean Field and Markovian Agents*”. Presented to *European Performance Evaluation Workshop (EPEW 09)*, London, UK.

4/9/2005: **Keynote speech** - M. Gribaudo, “*The Technology Used in the "European DISTance TRaining Interactive and Collaborative Tools for the Civil Protection"* (e-DISTRICT CiPro), Leonardo da Vinci European Project”. Presented to *Third Medical Emergency Medicine Congress (MEMC3)*, Nice, France.

20/1/2004: **Keynote speech** - R. Gaeta, M. Gribaudo, D. Manini, M. Sereno, “*An analytical modelling technique for computing transfer time distributions in peer-to-peer networks*”. Presented to the “*Workshop Interno Progetto FIRB (Tango)*”, Madonna di Campiglio, Italy.

20/12/2001: **Keynote speech** - M. Ajmone Marsan, M. Gribaudo, M. Meo, and M. Sereno. “*Performance Analysis of Data Services over GPRS*”. Presented to *International Conference On High Performance Computing*, Hyderabad, India.

HONORS

Approved for a **Full Professor** position in computer science (INF-01), “*RIF. 018CIII2022/1549/R22 Approvazione atti procedura selettiva ex art. 18, co. 1, Legge 240/2010 per la copertura di un posto di Professore Universitario di ruolo - prima fascia ..., settore concorsuale: 01/B1 - Informatica, SSD: INF/01 - Informatica.*” – University of Bologna, 2/6/2023. The local department, however, decided to call one of the other two winners to fill the position.

Best paper award: P. Pizzolla, M. Gribaudo, F. Porpiglia, E. Vezzetti, M.G. Violante, S. Moos, “*Enhancing Spatial Navigation in Robot-Assisted Surgery: an Application*”. International Conference on Design Tools and Methods in Industrial Engineering (ADM 2019). *Modena, Italy, September 10th, 2019.*

Best paper award: M. Gribaudo, M. Iacono, D. Manini, “*Performance Evaluation Of Massively Distributed Microservices Based Applications*”. European Conference on Modelling and Simulation (ECMS 2017). *Budapest, Hungary, May 24th, 2017.*

Best paper award: D. Manini, M. Gribaudo, “*Modelling Search, Availability, and Parallel Download in P2P File Sharing Applications with Fluid Model*”. *14th International Conference on Advanced Computing and Communication ADCOM 2006, Mangalore, India, December 20th, 2001.*

On 24/11/1997, my MS thesis has been awarded with a medal as the “best thesis of the year 1996/1997”.

Tutorials in international conferences

10/4/2018: M. Gribaudo, “*Modelling with Markovian Agents*”, in International Conference on Performance Engineering (ICPE 2018), Berlin, Germany, April 10, 2018.

10/12/2013: D. Cerotti, M. Gribaudo, P. Piazzolla and G. Serazzi, “*Performance optimization with JMT: Java Modelling Tools*”, in Quantitative Evaluation of Systems (ValueTOOLS 2013), Turin, Italy, December 10, 2013.

17/9/2012: A. Bobbio, D. Cerotti and M. Gribaudo, “*Markovian Agents models*”, in Quantitative Evaluation of Systems (QEST 2012), London, UK, September 17, 2012.

19/9/2005: M. Gribaudo and M. Telek, “*Fluid Models in Performance Analysis*”, in Quantitative Evaluation of Systems (QEST 2005), Turin, Italy, September 19, 2005.

Conference Talks

20-23/6/2023: European Performance Engineering Workshop (EPEW 2023), Firenze, Italy. Presented “*Workflow Characterization of a Big Data System Model for Healthcare Through Multiformalism*”.

31/05-3/6/2022: European Conference on Modelling and Simulation (ECMS 2022), Alesund, Norway. Presented “*A DSL-Based Modelling Approach for Energy Harvesting IoT/WSN*”.

13-14/12/2021: International Conference on Analytical and Stochastic Modelling Techniques and Applications (ASMTA 2021), Tsukuba, Japan (*on-line event*). Presented “*Hybrid simulation of moving agents systems applied to energy management in IoT edge computing surveillance systems*”.

23-27/8/2021: Quantitative Evaluation of Systems (QEST21), Paris, France (*on-line event*). Presented “*Simulation of n-dimensional second-order fluid models with different absorbing, reflecting and mixed barriers*”.

27-30/1/2020: Annual Reliability and Maintainability Symposium (RAMS 2020), Palm Spring, USA (*on-line event*). Presented “*Assessing self-adapting routing algorithm in an industrial IoT environment*”.

28/11/2019: International Workshop on Practical Applications of Stochastic Modelling (PASM 2019), Milano, Italy. Presented “*On Evaluating the Safety of Crowds in Enclosed Spaces by Markovian Agents*”.

23-25/10/2019: International Conference on Analytical and Stochastic Modelling Techniques and Applications (ASMTA 2019), Moskow, Russia. Presented “*Map-Reduce Process Algebra: a formalism to describe Directed Acyclic Graph task-based jobs in parallel environments*”.

14-15/10/2019: Information Sciences and Systems (ISCIS 2019), Paris, France. Presented “*Performance-driven Analysis for an Adaptive Car Navigation Service on HPC Systems*”.

11-14/6/2019: European Conference on Modelling and Simulation (ECMS 2019), Caserta, Italy. Presented “*Reducing sickness and enhancing virtual reality simulation on mobile devices by tracking the body rotation*”.

25-26/4/2019: Computer Vision Conference (CVC 2019), Las Vegas, NV, Usa. Presented “*Non-linear-Optimization Using SQP for 3D Deformable Prostate Model Pose Estimation in Minimally Invasive Surgery*”.

- 23-25/7/2018: Queueing Theory with Network Applications (QTNA 2018), Tsukuba, Japan. *Presented "Modelling large timescale and small timescale service variability"*.
- 22-25/5/2018: European Conference on Modelling and Simulation (ECMS 2018), Whilelshaven, Germany. *Presented "Anchor placement in indoor object tracking systems for virtual reality simulations"*.
- 11-13/4/2018: International Conference on Performance Engineering (ICPE 2018), Berlin, Germany. *Presented "Performance Prediction of Cloud-Based Big Data Application"*.
- 5-7/12/2017: International Conference on Performance Evaluation Methodologies and Tools (ValueTools 2018), Venice, Italy. *Presented "Scalable analytical model of the reliability of multicore systems-on-chip by interacting Markovian agents" and "Modeling and evaluating performances of complex edge computing based systems: a firefighting support system case study"*.
- 9/9/2017: International Workshop on Practical Applications of Stochastic Modelling (PASM 2018), Berlin, Germany. *Presented "Epistemic Uncertainty Propagation in Power Models" and "Performance evaluation of replication policies in microservice based architectures"*.
- 10-12/7/2017: International Conference on Analytical and Stochastic Modelling Techniques and Applications (ASMTA 2017), Newcastle-upon-Tyne, UK. *Presented: "Modeling multiclass task-based applications on heterogeneous distributed environments"*.
- 23-26/6/2017: European Conference on Modelling and Simulation (ECMS 2017), Budapest, Hungary. *Presented "A low-cost distributed iot-based augmented reality interactive simulator for team training" and "Performance evaluation of massively distributed microservices based applications"*.
- 16-19/5/2017 - International Workshop on Energy-Efficient Data Centres (ED2C 2017) and ACM eEnergy 2017, Hong Kong. *Presented "Improving energy efficiency for transactional workloads in cloud environments"*.
- 24-26/8/2016: International Conference on Analytical and Stochastic Modelling Techniques and Applications (ASMTA 2016), Cardiff, UK. *Presented "Fluid approximation of pool depletion systems"*.
- 31/5-3/6/2016: European Conference on Modelling and Simulation (ECMS 2016), Regensburg, Germany. *Presented "Three layers network influence on cloud data center performances" and "vMannequin: A fashion store concept design tool"*.
- 4-5/4/2016: International Workshop on Practical Applications of Stochastic Modelling (PASM 2016) and Conference on Measurement, Modeling, and Evaluation of Computer and Communication Systems (MMB 2016), Munster, Germany. *Presented "Stochastic analysis of energy consumption in pool depletion systems"*.
- 9-10/12/2015: Conference of the Italian Chapter of AIS (ITAIS 2015). *Presented "Power consumption analysis of replicated virtual applications in heterogeneous architectures" and "Modeling replication and erasure coding in large scale distributed storage systems based on CEPH"*.
- 22-24/9/2015: Information Sciences and Systems (ISCISS 2015), London, UK. *Presented "Modeling Power Consumption in Multicore CPUs with Multithreading and Frequency Scaling"*.
- 25-30/5/2015: International Conference on Analytical and Stochastic Modelling Techniques and Applications (ASMTA 2015) and European Conference on Modelling and Simulation (ECMS 2015), Albena (Varna), Bulgaria. *Presented "A simulation based approach for the evaluation of outcome driven innovation models"*.

20-22/8/2014: European Conference on Queuing Theory (ECQT 2014), Ghent, Belgium. *Presented "Energy consumption in systems with multi-class workloads"*.

30/6-2/7/2014: International Conference on Analytical and Stochastic Modelling Techniques and Applications (ASMTA 2014), Budapest, Hungary. *Presented "Throughput maximization with multiclass workloads and resource constraints" and "Markovian agents population models to study cancer evolution"*.

27-30/5/2014: European Conference on Modelling and Simulation (ECMS 2014), Brescia, Italy. *Presented "Workload characterization of multithreaded applications on multicore architectures"*.

10-12/12/2013: International Conference on Performance Evaluation Methodologies and Tools (ValueTools 2013), Torino, Italy. *Presented "Modeling apache hive based applications in big data architectures" and "Performance optimization with JMT: Java modelling tools"*.

16-17/9/2013: European Performance Engineering Workshop (EPEW 2013), Venezia, Italy. *Presented "End-to-end performance of multi-core systems in cloud environments"*.

8-10/7/2013: International Conference on Analytical and Stochastic Modelling Techniques and Applications (ASMTA 2013), Gent, Belgium. *Presented "Studying mobile internet technologies with agent based mean-field models"*.

27-30/5/2013: European Conference on Modelling and Simulation (ECMS 2013), Alesund, Norway. *Presented "A performance modeling language for big data architectures"*.

17-20/9/2012: Quantitative Evaluation of Systems (QEST12), London, UK. *Presented "Flexible CPU provisioning in clouds: A new source of performance unpredictability"*.

4-6/6/2012: International Conference on Analytical and Stochastic Modelling Techniques and Applications (ASMTA 2012), Grenoble, France. *Presented "Consolidation and replication of VMs matching performance objectives"*.

12-13/10/2011: European Performance Engineering Workshop (EPEW 2011), Borrowdale, UK. *Presented "A tool suite for modelling spatial interdependencies of distributed systems with Markovian agents"*.

20-22/6/2011: International Conference on Analytical and Stochastic Modelling Techniques and Applications (ASMTA 2011), Venice, Italy. *Presented "Performability modeling of exceptions-aware systems in multiformalism tools"*.

17-19/8/2010: International Symposium on Modeling, Analysis and Simulation of Computer and Telecommunication Systems (MASCOTS 2010), Miami, FL (USA). *Presented "Element based semantics in multi formalism performance models"*.

14-16/6/2010: International Conference on Analytical and Stochastic Modelling Techniques and Applications (ASMTA 2010), Cardiff, UK. *Presented "Performance evaluation of media segmentation heuristics using non-markovian multi-class arrival processes"*.

9–12/6/2009: International Conference on Analytical and Stochastic Modelling Techniques and Applications (ASMTA 2009) and European Conference on Modelling and Simulation (ECMS 2009), Madrid, Spain. *Presented "Stochastic modelling of poll based multimedia productions"*.

- 23–27/3/2009: European joint conferences on Theory And Practice of Software (ETAPS2009), York, UK. *Presented "ITPN-Perfbound: A performance bound tool for interval time petri nets"*.
- 23–25/9/2008: International Workshop on Practical Applications of Stochastic Modelling (PASM 2008) and European Performance Engineering Workshop (EPEW 2008), Palma de Mallorca, Spain. *Presented "Performance Analysis of the ARIA Adaptive Media Processing Workflows using Colored Petri Nets"*.
- 4–6/6/2008: International Conference on Analytical and Stochastic Modelling Techniques and Applications (ASMTA 2008) and European Conference on Modelling and Simulation (ECMS 2008), Nicosia, Cyprus. *Presented "An analytical study of the resource diffusion in non-homogeneous P2P networks"*.
- 17–21/3/2008: IEEE International Workshop on Sensor Networks and Systems for Pervasive Computing (PerSeNS 2008), Kowloon, Hong Kong. *Presented "Analysis of on-off policies in sensor networks using interacting Markovian Agents"*.
- 11–14/9/2006 Quantitative Evaluation of Systems (QEST06), Riverside (CA), USA. *Presented "Performance analysis of Delay Tolerant Networks with model checking techniques"*.
- 27-29/3/2006: Conference on Measurement, Modeling, and Evaluation of Computer and Communication Systems (MMB 2006), Nurnberg, Germania. *Presented "Fixed-point approximations for TCP behavior in networks of routers implementing heterogeneous queue management policies"*.
- 28/6-1/7/2005: International Conference on Dependable Systems and Networks (DSN2005), Yokohama, Japan. *Presented "A spatial fluid-based framework to analyze large-scale wireless sensor networks"*.
- 24–26/6/2004: International Conference on Dependable Systems and Networks (DSN2004), Flornce, Italy. *Presented "An efficient algorithm for the transient analysis of a class of deterministic stochastic petri nets"*.
- 2–5/9/2001: International Workshop on Petri Nets and Perform Models 2003, PNPM'03, Urbana, IL, USA, and Sixth International Workshop on Performability Modeling of Computer and Communication Systems (PMCCS 5), Monticello, IL, USA. *Presented "Stationary analysis of FSPNs with mutually dependent discrete and continuous parts"*.
- 24–26/6/2002: International Conference on Dependable Systems and Networks (DSN2002), Washington, DC, USA. *Presented "DrawNet++: A flexible framework for building dependability models"*.
- 21–23/4/2002: International Conference on Modelling Tools and Techniques for Computer and Communication System Performance Evaluation, London, UK. *Presented "DrawNET++: Model objects to support performance analysis and simulation of systems"*.
- 11–16/9/2001: International Workshop on Petri Nets and Perform Models 2001, PNPM'01, Aachen, Germania, and Fifth International Workshop on Performability Modeling of Computer and Communication Systems (PMCCS 5), Erlangen, Germany. *Presented "Numerical Analysis of Bounded Fluid Models using Matrix Exponentiation"*.
- 25–28/6/2001: International Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA'01), Las Vegas, NE, (USA). *Presented "A multiparadigm simulation framework"*.
- 29/8-1/9/2000: International Symposium on Modeling, Analysis and Simulation of Computer and Telecommunication Systems (MASCOTS 2000), San Francisco, Ca (USA). *Presented "Simulation of Fluid Stochastic Petri Nets"*.
- 6–10/9/1999: Multi-Workshop on Formal Methods in Performance Evaluation and Application, Saragoza, Spain. *Presented "Modeling software systems with rejuvenation, restoration and checkpointing through fluid stochastic Petri nets" and "Fluid stochastic Petri nets: An extended formalism to include non-Markovian models"*.

Editorial board

JOURNAL OF HIGH SPEED NETWORKS [1992-] 0926-6801, from January 2018.

Teaching Activities

My teaching activity includes experiences both at the University and at the industry.

University Courses

I have been the main lecturer in Introductory Computer Science, Computer Graphics, and Performance Evaluation. The following table summarizes my teaching activity at the University level (Bachelor, Master or PhD).

Year	Course (Ita.)	Course (Eng.)	Level	Hours	Students
2023-2024	[Course given in English]	Computer Graphics	MS	50	~200
2023-2024	[Course given in English]	Performance Evaluation and Applications	MS	50	~120
2023-2024	<i>Tecniche della rappresentazione – M1</i>	Representation techniques (for the fashion industry) – M1	BS	40	~50
2023-2024	<i>Tecniche della rappresentazione – M2</i>	Representation techniques (for the fashion industry) – M2	BS	40	~50
2022-2023	[Course given in English]	Performance Evaluation and Applications	MS	50	~90
2022-2023	<i>Tecniche della rappresentazione – M1</i>	Representation techniques (for the fashion industry) – M1	BS	40	~45
2022-2023	<i>Tecniche della rappresentazione – M2</i>	Representation techniques (for the fashion industry) – M2	BS	40	~45
2022-2023	[Course given in English]	Computer Graphics	MS	50	~200
2021-2022	[Course given in English]	Performance Evaluation and Applications	MS	50	~80
2021-2022	<i>Tecniche della rappresentazione – M1</i>	Representation techniques (for the fashion industry) – M1	BS	40	~45
2021-2022	<i>Tecniche della rappresentazione – M2</i>	Representation techniques (for the fashion industry) – M2	BS	40	~45
2021-2022	[Course given in English]	Digital Interactive Technologies for Physical Interfaces	MS	30	~50
2021-2022	[Course given in English]	Computer Graphics	MS	50	~200
2020-2021	[Course given in English]	Computer Systems Performance Evaluation	MS	50	~100
2020-2021	<i>Tecniche della rappresentazione – M1</i>	Representation techniques (for the fashion industry) – M1	BS	40	~45
2020-2021	<i>Tecniche della rappresentazione – M2</i>	Representation techniques (for the fashion industry) – M2	BS	40	~45

2020-2021	[Course given in English]	Digital Interactive Technologies for Physical Interfaces	MS	30	~50
2020-2021	[Course given in English]	Computer Graphics	MS	50	~200
2019-2020	[Course given in English]	Computer Systems Performance Evaluation	MS	50	~100
2019-2020	Tecniche della rappresentazione	Representation techniques (for the fashion industry)	BS	40	~45
2019-2020	[Course given in English]	Digital Interactive Technologies for Physical Interfaces	MS	30	~50
2019-2020	[Course given in English]	Computer Graphics	MS	50	~200
2018-2019	[Course given in English]	Computer Systems Performance Evaluation	MS	50	~75
2018-2019	[Course given in English]	Performance Evaluation of Computer Systems	MS	50	~35
2018-2019	Tecniche della rappresentazione	Representation techniques (for the fashion industry)	BS	40	~45
2018-2019	[Course given in English]	Digital Interactive Technologies for Physical Interfaces	MS	30	~50
2018-2019	[Course given in English]	Computer Graphics	MS	50	~200
2017-2018	[Course given in English]	Computer Systems Performance Evaluation	MS	50	~75
2017-2018	[Course given in English]	Performance Evaluation of Computer Systems	MS	50	~35
2017-2018	Tecniche della rappresentazione	Representation techniques (for the fashion industry)	BS	40	~45
2017-2018	[Course given in English]	Computer Graphics	MS	50	~240
2016-2017	[Course given in English]	Performance Evaluation of Computer Systems	MS	50	~15
2016-2017	[Course given in English]	Computing Infrastructures	MS	50	~180
2016-2017	[Course given in English]	Computer Graphics	MS	50	~80
2015-2016	[Course given in English]	Performance Evaluation of Computer Systems	MS	50	~75
2015-2016	[Course given in English]	Computing Infrastructures	MS	50	~180
2015-2016	[Course given in English]	Computer Graphics	MS	50	~80
2015-2016	[Course given in English]	<i>Quantitative Analysis Of Very-Large Systems: Metrics Models, Techniques, Methodologies And Tools</i>	PHD	5 / 25	~10
2014-2015	[Course given in English]	Performance Evaluation of Computer Systems	MS	50	~75
2014-2015	[Course given in English]	Computing Infrastructures	MS	50	~180
2014-2015	[Course given in English]	Computer Graphics	MS	50	~80
2013-2014	[Course given in English]	Enterprise Digital Infrastructures	MS	50	~180
2013-2014	[Course given in English]	Computer Graphics	MS	50	~80
2013-2014	[Course given in English]	<i>Quantitative Analysis Of Very-Large Systems: Metrics Models, Techniques, Methodologies And Tools</i>	PHD	5 / 25	~10
2012-2013	[Course given in English]	Computer Systems	BS	50	~25
2012-2013	[Course given in English]	Computer Graphics	MS	50	~80

2011-2012	Informatica (Civ)	Basic Compute Science	BS	117	~120
2011-2012	[Course given in English]	Computer Systems	BS	50	~25
2011-2012	[Course given in English]	Computer Graphics	MS	50	~80
2011-2012	[Course given in English]	Performance Evaluation	PHD	5 / 25	~10
2010-2011	Informatica (Civ)	Basic Compute Science	BS	117	~120
2010-2011	[Course given in English]	Computer Systems	BS	50	~25
2009-2010	Informatica Grafica per le arti	Computer Graphics for Arts	BS	54	~150
2009-2010	Informatica + Laboratorio	Basic Computer Science	BS	24	~45
2009-2010	Sistemi Multimediali	Multimedia Systems	MS	48	~25
2008-2009	Informatica Grafica per le arti	Computer Graphics for Arts	BS	60	~150
2008-2009	Informatica + Laboratorio	Basic Computer Science	BS	24	~45
2007-2008	Informatica Grafica per le arti	Computer Graphics for Arts	BS	60	~150
2006-2007	Informatica Grafica per le arti	Computer Graphics for Arts	BS	60	~150
2005-2006	Informatica Grafica	Computer Graphics	BS	60	~150
2005-2006	Informatica Grafica II	Intermediate Computer Graphics	MS	60	~25
2005-2005	Informatica + Laboratorio	Basic Computer Science	BS	24	~45
2004-2005	Informatica Grafica	Computer Graphics	BS	60	~150
2004-2005	Informatica Grafica II	Intermediate Computer Graphics	MS	60	~25
2003-2004	Informatica Grafica	Computer Graphics	BS	60	~150
2003-2004	Informatica + Laboratorio	Basic Computer Science	BS	24	~45
2002-2003	Informatica Grafica	Computer Graphics	BS	60	~150
2002-2003	Informatica + Laboratorio	Basic Computer Science	BS	24	~45
2001-2002	Informatica Grafica	Computer Graphics	BS	60	~150
2001-2002	Informatica + Laboratorio	Basic Computer Science	BS	24	~45

Innovative Education

“*Reconstruction of the Wild T2 in VR*” – creation of a VR application to teach students the components and the operation of the historical theodolite Wild T2 in Virtual Reality. This application has been used during the basic architecture courses in year 2022 / 2023 by the *Civil Engineering Department* at Politecnico di Milano.

“*in-class evaluation*” – a system to motivate students following and interacting during the lessons, through a set of daily assignments and deliveries. This innovative education system has been applied to the Performance Evaluation and Applications course in 2022 / 2023 and 2023 / 2024, obtaining a high appreciation by students, proved by a large increase in the number of enrolments.

International University Courses

I gave the following course at the RUDN – People Friendship University of Moscow (Russia), at the MS level:

23-27/10/2017 - “Performance Modelling with Queuing Networks” (10 hours)

23-27/10/2017 - “Fundamental Laws of Dependability” (10 hours),

5-15/05/2018 - “Modelling with Mean Field and Markovian Agents Techniques” (10 hours)

5/06/2020 - “Introduction to 3D Computer Graphics” (5 hours)

Courses at University Endorsed Masters

MASTER DI I LIVELLO IN PROGETTAZIONE DELLA COMUNICAZIONE DIGITALE - DIGITAL COMMUNICATION DESIGN (GIA' MASTER IN PROGETTAZIONE E MANAGEMENT DEL MULTIMEDIA PER LA COMUNICAZIONE) – University of Torino. From 2005/2006 until 2022/2023 – Course “Grafica 3D” – 20 hours, In Italian.

INTERNATIONAL MASTER IN BUSINESS ANALYTICS AND BIG DATA – Politecnico of Milano. From 2016/2017 until 2022/2023 – Course “Cloud Technologies and Big Data Frameworks” – between 20 and 32 hours (depending on the edition), in English.

Thesis

I have followed more than 200 students, between bachelor and master degree. In Appendix B, you can find the title of the thesis I followed in the last years.

P.h.D students

I have been co-advisor for three PhD students: Davide Cerotti (2007-2010), Pietro Piazzolla (2007-2010) and Enrico Barbierato (2010-2013). They all have been post-docs at the Politecnico of Milano in my group. Currently Davide Cerotti is a Senior Researcher (RTD-B) at the “Università del Piemonte Orientale – Vercelli”, Pietro Piazzolla is a Senior Researcher (RTD-B) at the “Politecnico di Torino” and Enrico Barbierato is a Junior Researcher (RTD-A) at the “Università Cattolica del Sacro Cuore – Brescia”. I have been the main advisor of Riccardo Pincioli, PhD student at the Politecnico of Milano. Riccardo Pincioli is now working for the industry, after a 4-years Post-Doc at the GSSI – L’Aquila. I also have been co-advisor of PhD student Erica Stella, who however decided to quit and go to the industry before obtaining her title.

I have been Member of the scientific program board of the international P.h.D. in “Cyber Physical Systems”, cycle 33 and 34, years 2017-2018 and 2018-2019 for the University of Messina (Italy).

I am Member of the scientific program board of the international P.h.D. in “Engineering”, cycle 39 years 2023-2024 for the University of Messina (Italy).

Advanced professional courses

I have given courses in various professional curriculums on the following topics: Metaverse, Computer Graphics and Animation, Web programming, Cloud Computing, Enterprise Computing Infrastructure, Performance Evaluation and Dependability.

Technical knowledge and other related activities

Programming languages:

General Purpose Languages: *C, C++, Java, Basic (Visual Basic), Ada, Lisp, Assembler, Pascal, Fortran*. Web Languages:

PHP, Javascript. Multimedia Languages: *Actionscript, Ling*. 3D Graphics Languages: *MEL, HLSL, Cg, GLSL*. Mathematical Languages: *Mathematica, Matlab, Octave*

Technologies and Data Bases:

Web Technologies: *HTML, XML, SVG, VRML, X3D, Collada*. Database: *SQL, MySQL, Access*. Rendering Engines and Virtual Reality Technologies: *Open GL, Microsoft DirectX, Torque, Unreal. Technology, Ogre, Adobe Atmosphere, ViewPoint, Balxxun, Mental Ray, JME*. BigData technologies: *Hadoop, Hive, Cassandra, Mongo DB, H-Base*. Virtualization and Cloud technologies: *OpenStack, VirtualBox, VMware*

Operating Systems:

Microsoft Windows, Linux, Solaris, MacOS. Advanced knowledge on administration of networks, firewalls and on configuration and integration of services.

Applications

Office Automation: *Microsoft Office, LaTeX*. 2D Graphics: *Corel Draw, Adobe Flash, Adobe PhotoShop, Jasc Paint Shop Pro, GIMP, Tgif, Xfig*. 3D Graphics: *Maya, 3D Studio, Lightwave, Blender, Bryce, Poser, Motion Builder*. Compositing and Video Editing: *Discreet Combustion, Adobe Premiere, Adobe After Effect*. Multimedia and Web production: *Macromedia Director, Macromedia Dreamweaver*. Digital Audio: *Sony Sound Forge, Steinberg Cubase, Lectra Modaris, Lectra Diamino*.

Game Programming with Unity. VR application development on Meta QUEST.

Advanced 3D Graphics Knowledge: *Vicon Motion Capture* technology and the *IQ* data acquisition software

Hardware Technical Skills

Assembly and expansion of Personal Computers. Installation and configuration of Computer Networks. Programming of micro-controllers and Arduino experiences. Programming FPGAs in Verilog.

Tracking experience using inertial measurement units and indoor ultra-wide-band positioning systems.

Third mission

Appointed as a “verificatore” for the Italian Institution “TAR del Lazio”, in the cause of appeal 9332/2018 from the DEIB department of Politecnico di Milano – *October 2018*.

Evaluator for a project funded by the Cariplo Bank, for the Cagliari Univesrity (Regione Sardegna) – *March 2019*.

Scientific evaluation for the Swiss National Science Foundation for a project grant approval – *July 2021*.

Committed for the selection of a technician for the Municipality of Nova Milanese – *January 2023*.

Milano,
March 13th, 2024

Marco Gribaudo.



Informativa ai sensi dell'art. 13 del D.Lgs 196/2003:

i dati sopra riportati sono prescritti dalle disposizioni vigenti ai fini del procedimento per il quale sono richiesti e verranno utilizzati esclusivamente per tale scopo.

AUTODICHIARAZIONE AI SENSI DEGLI ARTT. 46 E 47 D.P.R. N. 445/2000

Il sottoscritto Gribaudo Marco, nato il 27.04.1972 a Torino (TO), residente in Milano (MI), via Benefattori dell’Ospedale, 3 e domiciliato in Milano (MI), via Benefattori dell’Ospedale 3, identificato a mezzo Carta d’Identità nr. CA85866OT, rilasciato da COMUNE DI MILANO in data 19.04.2023, utenza telefonica 328 2126190 , consapevole delle conseguenze penali previste in caso di dichiarazioni mendaci a pubblico ufficiale

(art. 495 c.p.)

DICHIARA SOTTO LA PROPRIA RESPONSABILITÀ

- che le informazioni e le dichiarazioni contenute nel presente curriculum vitae corrispondono al vero;
- di essere in possesso di tutti i titoli riportati nel presente curriculum vitae;
- che ogni contenuto relativo a titoli, pubblicazioni e attività svolte riportate nel presente curriculum vitae corrisponde al vero;
- che le copie delle pubblicazioni presentate ai fini della valutazione analitica sono conformi all’originale.

Milano,
13/03/2024

Firma



Appendix A – List of publications

Here follows the list of my main publications, mostly reported by Scopus on March 12th, 2024.

2024

- [2024] **Article**. Rossoni M., Pozzi M., Colombo G., Piazzolla P., Gribaudo M, “Physically Based Rendering of Animated Point Clouds for EXTENDED REALITY”. In *Journal of Computing and Information Science in Engineering*, Vol. 24, Issue 5, DOI: 10.1115/1.4063559. Pub: American Society of Mechanical Engineers (ASME)
- [2024] **Article**. Dolci T., Amata L., Manco C., Azzalini F., Gribaudo M., Tanca L., “Tools for Healthcare Data Lake Infrastructure Benchmarking”. *Information System Frontier*, DOI: 10.1007/s10796-023-10468-5. Pub: Springer Nature

2023

- [2023] **Conference Paper**. Gribaudo M., Iacono, M., Levis A.H.: “Evaluating defense services performance on military cloud”. In *2023 IEEE International Workshop on Technologies for Defense and Security, TechDefense 2023*, Pg. 406-411, <https://doi.org/10.1109/TechDefense59795.2023.10380886>.
- [2023] **Conference Paper**. Piazzolla P., Rossoni M., Pozzi M., Colombo G., Gribaudo M: “ANIMATED POINT CLOUDS REAL-TIME RENDERING FOR EXTENDED REALITY”. In *Proceedings of the ASME Design Engineering Technical Conference. 20 August 2023 through 23 August 2023*. Pub: American Society of Mechanical Engineers (ASME)
- [2023] **Conference Paper**. Covioli T., Dolci, T., Azzalini, F., Barbierato, E., Piantella D., Gribaudo, M.: “Workflow Characterization of a Big Data System Model for Healthcare Through Multiformalism”. In *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, Vol. 14231 LNCS, Pg. 279-293, *Proceedings of the International Conference on Analytical and Stochastic Modelling Techniques and Applications, ASMTA 2023. 20 June 2023 through 23 June 2023*. Pub: Springer Science and Business Media Deutschland GmbH
- [2023] **Conference Paper**. Gribaudo M., Iacono M., Manini D., Mastroianni M.: “Analysis of the Battery Level in Complex Wireless Sensor Networks Using a Two Time Scales Second Order Fluid Model”. In *Communications in Computer and Information Science*, Vol. 1786, Pg. 47-60, DOI: 10.1007/978-3-031-44053-3_3. *Proceedings of the 11th International Workshop on Practical Applications of Stochastic Modelling (PASM 2022). 23 September 2022*.
- [2023] **Conference Paper**. Aldinucci M., Baralis E.M., Cardellini V., Colonnelli I., Danelutto M., Decherchi S., Di Modica G., Ferrucci L., Gribaudo M., Iannone F., Lapegna M., Medic D., Muscianisi G., Righetti F., Sciacca E., Tonello N., Tortonesi M., Trunfio P., Vardanega T.: “A Systematic Mapping Study of Italian Research on Workflows”. In *International Conference on High Performance*

Computing, Network, Storage, and Analysis, SC Workshops. 12 November through 19 November 2023. Pub: ACM

- [2023] **Article**. Barbierato E., Manini D., Gribaudo M, “A Multiformalism-Based Model for Performance Evaluation of Green Data Centres”.In *Electronics (Switzerland)*, Vol. 12, Issue 10, DOI: 10.3390/electronics12102169 .Pub: MDPI AG
- [2023] **Conference Paper**. Barbierato, E., Iacono M., Gribaudo M., Mastroianni M.: " Cost and Performance-based Evaluation of Cloud-based Disaster Recovery". In *Proceedings - European Council for Modelling and Simulation, ECMS*, Vol. 37, Issue 1, Pg. 568-574, DOI: 10.7148/2023-0568. *Proceedings of 37th International ECMS Conference on Modelling and Simulation, ECMS 2023. 20 June 2023 through 23 June 2023. Pub: European Council for Modelling and Simulation*
- [2023] **Conference Paper**. Campanile, L., Di Bonito, L. P., Gribaudo M., Iacono, M.: " A Domain Specific Language for the Design of Artificial Intelligence Applications for Process Engineering". In, Vol. 482 LNICST, Pg. 133-146, https://doi.org/10.1007/978-3-031-31234-2_8. *Proceedings of International Conference on Performance Evaluation Methodologies and Tools, VALUETOOLS 2022. 16-19 November 2022. Pub: Springer Science and Business Media Deutschland GmbH*
- [2023] **Conference Paper**. Gribaudo M., Iacono, M.: "Places, Transitions and Queues: New proposals for Interconnection Semantics". In *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, Vol. 13659 LNCS, Pg. 216-230, https://doi.org/10.1007/978-3-031-25049-1_14. *Proceedings of 18th European Workshop on Computer Performance Engineering, EPEW 2022. 21 September 2022 through 23 September 2022. Pub: Springer Science and Business Media Deutschland GmbH*
- [2023] **Conference Paper**. Manco, C., Dolci, T., Azzalini, F., Barbierato, E., Gribaudo, M., Tanca, L.: "HEALER: A Data Lake Architecture for Healthcare". In *CEUR Workshop Proceedings*, Vol. 3379. *Proceedings of the Workshop oof the EDBT / ICDT. 20 March 2023. Pub: CEUR-WS.org*
- [2023] **Article**. Bobbio A., Campanile L., Gribaudo M., Iacono M., Marulli F., Mastroianni M.: " A cyber warfare perspective on risks related to health IoT devices and contact tracing".In *Neural Computing and Applications*, DOI: 10.1007/s00521-021-06720-1 .Pub: Springer Science and Business Media Deutschland GmbH

2022

- [2022] **Conference Paper**. Cerotti, D., Mancini, S., Gribaudo M., Bobbio, A. : "Analysis of an Electric Veichle Charging System Along a Highway".In *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, Vol. 13479 LNCS, Pg. 298-316, https://doi.org/10.1007/978-3-031-16336-4_15 .*Proceedings of 19th International Conference on Quantitative Evaluation of Systems, QEST 2022. 13 September 2022*

through 16 September 2022. Pub: Springer Science and Business Media Deutschland GmbH

- [2022] **Conference Paper**. Campanile L., Iacono M., Gribaudo M., Marulli F., Mastroianni M.: "A DSL-based modeling approach for energy harvesting IoT/WSN". In *Proceedings - European Council for Modelling and Simulation, ECMS, Vol. 36, Issue 1, Pg. 317-323, DOI: 10.7148/2022-0317. Proceedings of 36th International ECMS Conference on Modelling and Simulation, ECMS 2022. 30 May 2022 through 3 June 2022. Pub: European Council for Modelling and Simulation*
- [2022] **Conference Paper**. Cappiello, C., Gribaudo, M., Pleabani, P., Salnitri, M., Tanca, L.: "Enabling Real-World Medicine with Data Lake Federation: A Research Perspective". In *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics), Vol. 13814*

2021

- [2021] **Article**. Barbierato E., Campanile L., Gribaudo M., Iacono M., Mastroianni M., Nacchia S.: "Performance evaluation for the design of a hybrid cloud based distance synchronous and asynchronous learning architecture". In *Simulation Modelling Practice and Theory, Vol. 109, DOI: 10.1016/j.simpat.2021.102303* .Pub: Elsevier B.V.
- [2021] **Article**. Gribaudo M., Iacono M., Manini D.: "COVID-19 spatial diffusion: A markovian agent-based model". In *Mathematics, Vol. 9, Issue 5, Pg. 1-12, DOI: 10.3390/math9050485* .Pub: MDPI AG
- [2021] **Article**. Gribaudo M., Manini D., Chiasserini C.F.: "Modelling user radio access in dense heterogeneous networks". In *Performance Evaluation, Vol. 146, DOI: 10.1016/j.peva.2020.102167* .Pub: Elsevier B.V.
- [2021] **Article**. Ardagna D., Barbierato E., Gianniti E., Gribaudo M., Pinto T.B.M., da Silva A.P.C., Almeida J.M.: "Predicting the performance of big data applications on the cloud". In *Journal of Supercomputing, Vol. 77, Issue 2, Pg. 1321-1353, DOI: 10.1007/s11227-020-03307-w* .Pub: Springer
- [2021] **Conference Paper**. Cerotti D., Bobbio A., Bruneo D., Distefano S., Scarpa M., Gribaudo M.: "Assessing Self-Adapting Routing Algorithm in an Industrial IoT Environment". In *Proceedings - Annual Reliability and Maintainability Symposium, Vol. 2021-May, DOI: 10.1109/RAMS48097.2021.9605660* .Proceedings of 67th Annual Reliability and Maintainability Symposium, RAMS 2021. 24 May 2021 through 27 May 2021. Pub: Institute of Electrical and Electronics Engineers Inc.
- [2021] **Conference Paper**. Barbierato E., Gribaudo M., Serazzi G., Tanca L.: "Performance Evaluation of a Data Lake Architecture via Modeling Techniques". In *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics), Vol. 13104 LNCS, Pg. 115-130, DOI: 10.1007/978-3-030-91825-5_7* .Proceedings of 17th European Performance Engineering Workshop, EPEW 2021, and the 26th International Conference on Analytical and Stochastic Modelling Techniques and Applications, ASMTA 2021. 13 December 2021 through 14 December 2021. Pub: Springer Science and Business Media Deutschland GmbH

- [2021] **Conference Paper**. Campanile L., Gribaudo M., Iacono M., Mastroianni M.: "Hybrid Simulation of Energy Management in IoT Edge Computing Surveillance Systems". In *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, Vol. 13104 LNCS, Pg. 345-359, DOI: 10.1007/978-3-030-91825-5_21 .Proceedings of 17th European Performance Engineering Workshop, EPEW 2021, and the 26th International Conference on Analytical and Stochastic Modelling Techniques and Applications, ASMTA 2021. 13 December 2021 through 14 December 2021. Pub: Springer Science and Business Media Deutschland GmbH
- [2021] **Conference Paper**. Gribaudo M., Iacono M., Manini D.: "Simulation of N-Dimensional Second-Order Fluid Models with Different Absorbing, Reflecting and Mixed Barriers". In *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, Vol. 12846 LNCS, Pg. 276-292, DOI: 10.1007/978-3-030-85172-9_15 .Proceedings of 18th International Conference on Quantitative Evaluation of Systems, QEST 2021. 23 August 2021 through 27 August 2021. Pub: Springer Science and Business Media Deutschland GmbH

2020

- [2020] **Article**. Barbierato E., Gribaudo M., Iacono M., Levis A.H.: "Evaluating the Safety of Crowds in Enclosed Spaces by Markovian Agents". In *Electronic Notes in Theoretical Computer Science*, Vol. 353, Pg. 61-75, DOI: 10.1016/j.entcs.2020.09.019 .Pub: Elsevier B.V.
- [2020] **Article**. Campanile L., Gribaudo M., Iacono M., Mastroianni M.: "Performance evaluation of a fog WSN infrastructure for emergency management". In *Simulation Modelling Practice and Theory*, Vol. 104, DOI: 10.1016/j.simpat.2020.102120 .Pub: Elsevier B.V.
- [2020] **Article**. Gribaudo M., Horváth I., Manini D., Telek M.: "Modelling large timescale and small timescale service variability". In *Annals of Operations Research*, Vol. 293, Issue 1, Pg. 123-140, DOI: 10.1007/s10479-019-03395-9 .Pub: Springer
- [2020] **Article**. Gribaudo M., Piazzolla P., Porpiglia F., Vezzetti E., Violante M.G.: "3D augmentation of the surgical video stream: Toward a modular approach". In *Computer Methods and Programs in Biomedicine*, Vol. 191, DOI: 10.1016/j.cmpb.2020.105505 .Pub: Elsevier Ireland Ltd
- [2020] **Conference Paper**. Gribaudo M., Pironti M., Pisano P., Manini D., Scuotto V.: "Circular economy: A coloured petri net based discrete event simulation model". In *Proceedings - European Council for Modelling and Simulation, ECMS*, Vol. 34, Issue 1, Pg. 97-103, .Proceedings of 34th International ECMS Conference on Modelling and Simulation, ECMS 2020. 9 June 2020 through 12 June 2020. Pub: European Council for Modelling and Simulation
- [2020] **Conference Paper**. Gribaudo M., Manini D., Pironti M., Pisano P.: "Circular Economy: A Performance Evaluation Perspective". In *ACM International Conference Proceeding Series*, Pg. 196-199, DOI: 10.1145/3388831.3388858 .Proceedings of 13th EAI International Conference on

Performance Evaluation Methodologies and Tools, VALUETOOLS 2020. 18 May 2020 through 20 May 2020. Pub: Association for Computing Machinery

- [2020] **Article**. Botta M., Cavagnino D., Gribaudo M., Piazzolla P.: "Fragile watermarking of 3D models in a transformed domain". In *Applied Sciences (Switzerland)*, Vol. 10, Issue 9, DOI: 10.3390/app10093244 .Pub: MDPI AG
- [2020] **Article**. Barbierato E., Gribaudo M., Serazzi G.: "Multi-formalism models for performance engineering". In *Future Internet*, Vol. 12, Issue 3, DOI: 10.3390/fi12030050 .Pub: MDPI AG
- [2020] **Article**. Campanile L., Gribaudo M., Iacono M., Marulli F., Mastroianni M.: "Computer network simulation with ns-3: A systematic literature review". In *Electronics (Switzerland)*, Vol. 9, Issue 2, DOI: 10.3390/electronics9020272 .Pub: MDPI AG
- [2020] **Conference Paper**. Barbierato E., Gribaudo M., Iacono M.: "Map-reduce process algebra: a formalism to describe directed acyclic graph task-based jobs in parallel environments". In *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, Vol. 12023 LNCS, Pg. 85-99, DOI: 10.1007/978-3-030-62885-7_7 .Proceedings of 25th International Conference on Analytical and Stochastic Modelling Techniques and Applications, ASMTA 2019. 21 October 2019 through 25 October 2019. Pub: Springer Science and Business Media Deutschland GmbH
- [2020] **Editorial**. Gribaudo M., Sopin E., Kochetkova I.: "Preface". In *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, Vol. 12023 LNCS, Pg. v-, .Proceedings of 25th International Conference on Analytical and Stochastic Modelling Techniques and Applications, ASMTA 2019. 21 October 2019 through 25 October 2019. Pub: Springer Science and Business Media Deutschland GmbH
- [2020] **Editorial**. Gribaudo M., Jansen D.N., Remke A.: "Preface". In *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, Vol. 12289 LNCS, Pg. v-vi, .Proceedings of 17th International Conference on Quantitative Evaluation Systems, QEST 2020. 31 August 2020 through 3 September 2020. Pub: Springer Science and Business Media Deutschland GmbH
- [2020] **Conference Paper**. Campanile L., Gribaudo M., Iacono M., Mastroianni M.: "Modelling performances of an autonomic router running under attack". In *International Journal of Embedded Systems*, Vol. 12, Issue 4, Pg. 458-466, DOI: 10.1504/IJES.2020.107645 .Pub: Inderscience Publishers
- [2020] **Editorial**. Gribaudo M., Phung-Duc T., Iacono M., Razumchik R.: "Preface". In *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, Vol. 12039 LNCS, Pg. v-, .Proceedings of 16th European Workshop on Computer Performance Engineering, EPEW 2019. 28 November 2019 through 29 November 2019. Pub: Springer
- [2020] **Article**. Arcari L., Gribaudo M., Palermo G., Serazzi G.: "Performance-Driven Analysis for an Adaptive Car-Navigation Service on HPC Systems". In *SN Computer Science*, Vol. 1, Issue 1, DOI: 10.1007/s42979-019-0035-7 .Pub: Springer

- [2020] **Conference Paper**. Gribaudo M., Moos S., Piazzolla P., Porpiglia F., Vezzetti E., Violante M.G.: "Enhancing Spatial Navigation in Robot-Assisted Surgery: An Application". In *Lecture Notes in Mechanical Engineering*, Pg. 95-105, DOI: 10.1007/978-3-030-31154-4_9. *Proceedings of International Conference on Design Tools and Methods in Industrial Engineering, ADM 2019. 9 September 2019 through 10 September 2019*. Pub: Springer
- [2020] **Article**. Antonelli F., Cortellessa V., Gribaudo M., Pincioli R., Trivedi K.S., Trubiani C.: "Analytical modeling of performance indices under epistemic uncertainty applied to cloud computing systems". In *Future Generation Computer Systems*, Vol. 102, Pg. 746-761, DOI: 10.1016/j.future.2019.09.006. Pub: Elsevier B.V.
- [2020] **Conference Paper**. Amparore D., Checcucci E., Gribaudo M., Piazzolla P., Porpiglia F., Vezzetti E.: "Non-linear-Optimization Using SQP for 3D Deformable Prostate Model Pose Estimation in Minimally Invasive Surgery". In *Advances in Intelligent Systems and Computing*, Vol. 943, Pg. 477-496, DOI: 10.1007/978-3-030-17795-9_35. *Proceedings of Computer Vision Conference, CVC 2019. 25 April 2019 through 26 April 2019*. Pub: Springer Verlag

2019

- [2019] **Article**. Cerotti D., Miele A., Gribaudo M., Bobbio A., Bolchini C.: "Scalable analytical model for reliability measures in aging VLSI by interacting Markovian agents". In *Performance Evaluation*, Vol. 132, Pg. 21-37, DOI: 10.1016/j.peva.2019.01.001. Pub: Elsevier B.V.
- [2019] **Article**. Cavalieri d'Oro E., Colombo S., Gribaudo M., Iacono M., Manca D., Piazzolla P.: "Modeling and evaluating a complex edge computing based systems: An emergency management support system case study". In *Internet of Things (Netherlands)*, Vol. 6, DOI: 10.1016/j.iot.2019.100054. Pub: Elsevier B.V.
- [2019] **Editorial**. Iacono M., Palmieri F., Gribaudo M., Ficco M.: "Preface". In *Proceedings - European Council for Modelling and Simulation, ECMS*, Vol. 33, Issue 1, .*Proceedings of 33rd International ECMS Conference on Modelling and Simulation, ECMS 2019. 11 June 2019 through 14 June 2019*. Pub: European Council for Modelling and Simulation
- [2019] **Conference Paper**. Gribaudo M., Campanile L., Iacono M., Mastroianni M.: "Performance modeling and analysis of an autonomic router". In *Proceedings - European Council for Modelling and Simulation, ECMS*, Vol. 33, Issue 1, Pg. 441-447, DOI: 10.7148/2019-0441. *Proceedings of 33rd International ECMS Conference on Modelling and Simulation, ECMS 2019. 11 June 2019 through 14 June 2019*. Pub: European Council for Modelling and Simulation
- [2019] **Conference Paper**. Branca G., Gribaudo M.: "Reducing sickness and enhancing virtual reality simulation on mobile devices by tracking the body rotation". In *Proceedings - European Council for Modelling and Simulation, ECMS*, Vol. 33, Issue 1, Pg. 428-433, DOI: 10.7148/2019-0428. *Proceedings of 33rd International ECMS Conference on Modelling and Simulation, ECMS 2019. 11 June 2019 through 14 June 2019*. Pub: European Council for Modelling and Simulation

- [2019] **Article**. Barbierato E., Gribaudo M., Iacono M., Jakóbk A.: " Exploiting CloudSim in a multiformalism modeling approach for cloud based systems".In *Simulation Modelling Practice and Theory*, Vol. 93, Pg. 133-147, DOI: 10.1016/j.simpat.2018.09.018 .Pub: Elsevier B.V.
- [2019] **Book Chapter**. Gribaudo M., Iacono M., Levis A.H.: " Multi-formalism modeling of complex social-behavioral systems".In *Social-Behavioral Modeling for Complex Systems*, Pg. 711-739, DOI: 10.1002/9781119485001.ch31 .Pub: wiley
- [2019] **Conference Paper**. Campanile L., Iacono M., Gribaudo M., Mastroianni M.: " Quantitative modeling of the behaviour of an autonomic router".In *ACM International Conference Proceeding Series*, Pg. 193-194, DOI: 10.1145/3306309.3306344 .Proceedings of 12th EAI International Conference on Performance Evaluation Methodologies and Tools, VALUETOOLS 2019. 13 March 2019 through 15 March 2019.Pub: Association for Computing Machinery
- [2019] **Book Chapter**. Cerotti D., Gribaudo M., Pinciroli R., Serazzi G.: " Modeling Techniques for Pool Depletion Systems".In *EAI/Springer Innovations in Communication and Computing*, Pg. 79-94, DOI: 10.1007/978-3-319-92378-9_6 .Pub: Springer Science and Business Media Deutschland GmbH
- [2019] **Book Chapter**. Spolaor S., Gribaudo M., Iacono M., Kadavy T., Oplatková Z.K., Mauri G., Pllana S., Senkerik R., Stojanovic N., Turunen E., Viktorin A., Vitabile S., Zamuda A., Nobile M.S.: " Towards human cell simulation".In *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, Vol. 11400, Pg. 221-249, DOI: 10.1007/978-3-030-16272-6_8 .Pub: Springer Verlag

2018

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Appendix B – List of MS thesis

Here follows the list of the thesis I have been the main advisor in the last 12 years.

Thesis Title	Student	Year
Algoritmi Efficienti Di Voxelizzazione Basati Su GPU	PONTECORVO ANDREA MATTEO	2013
Modellazione E Valutazione Delle Prestazioni Di Database Nosql	GANDINI ANDREA	2013
Tecniche Asincrone Per Lo Streaming Di Ambienti Virtuali	PUSCEDDU MATTEO	2013
Review Of Performance Evaluation Benchmarks Of Apache Hadoop	PUSTINA BLENDI	2013
Hadoop Performance Testing On Amazon EC2	AVCI AHMET	2013
Image Restoration Using PDE And Segmentation Techniques	NAZARI AVISHAN	2013
Energy Consumption Minimization In Systems With MultiClass Workloads	PINCIROLI RICCARDO	2013
Animazione 3D In HTML5: Reingegnerizzazione E Sviluppo Del Progetto Threcandy	PORRATI RICCARDO	2014
Dimensionamento Ottimale Delle Risorse Di Un Datacenter In Base A Modelli Prestazionali E Modelli Finanziari Stocastici	LOCATI GIOVANNI e RISI DANIELE	2014
Real-Time Grasp Pose Generation For Virtual Hand	CAPUTO PAOLO	2014
Optimizing Energy Consumption In Openstack Infrastructures Using Neural Networks	IOMMAZZO CHIARA e MIGLIAVACCA FEDERICO	2015
Valutazione Delle Prestazioni Di In Memory-Db In Ambienti Non-Virtualizzati: Il Caso Redis Su Architetture Intel	CIAPPINI ANDREA e SPADACINI STEFANO ATTILIO	2015
Productivity: Una Nuova Metrica Per L'analisi Di Performance Nei Processori Multi-Core E Multi-Thread	GIGLIOLI FRANCESCO	2015
Data Analysis And Rhadoop: Case Studies	RAHMAN KH.EHSANUR	2015
Tecnologie Per La Renderizzazione E La Correzione Di Superfici Trasparenti In Grafica Computerizzata	CAPITELLI NICCOLÒ	2015
Multi Chain Model	SHAHZAD HASSAN	2015
Computer Graphics: Shading With Dynamic Lightmaps	BIANCHI DAVIDE	2016
Creazione Di Hotspot In Ambienti VR 360	BIGONI LUCA	2016
Performance Measurements In A High Throughput Environment	SCHIAVI FRANCESCA CECILIA	2016

A Simulation-Based Study Of The Availability Of Hadoop Applications	MALBERTI MATTEO	2016
Mixed Reality Applications And The Human Body: A Set Of Case Studies Using Microsoft Hololens	MORENZETTI SERGIO	2017
Simplifying Complex What-If Analysis Of Queuing Network Models: A Python Framework For The Jmt - Java Modelling Tools	KRISHNAN RANJITHKUMAR	2017
Fast Non-Linear Transformations On Graphics Processing Units	ALBANESE MICHELE	2017
Orbit: Un Controller 6-DOF Compatibile HID Per Videogiochi E Modellazione In Ambienti Tridimensionali	CHIAPPALUPI LEONARDO e BUGLI IVAN	2017
Enhancing Virtual Reality Experience On Mobile Hardware By Tracking The Body Rotation	BRANCA GIANPAOLO	2018
Treadmill Omnidirezionale Per La Realta' Virtuale	CALCATERRA SILVIA	2018
Optimization Of Task Scheduling In Heterogeneous Cloud Environment Using Genetic Algorithm	ZHANG LIDONG	2018
Comparing Rendering Styles For Low-Cost Virtual Reality Environments	GHIRARDI ENRICO	2018
Simulazione Fisicamente Accurata Del Flusso Dell'agente Estinguente Di Un'estintore Per Applicazioni Interattive	MALTONI OMAR	2018
Altura And Heightmaps: Towards A Different Compression Approach For 3D Game Engines	PALUMBO ANDREA	2018
Performance Evaluation Of An Object Detection And Tracking Edge Computing System	ALEMANI ANDREA	2018
Data Augmentation To Train CNN For Tracking Live Stream Of Surgical Images	BIGAZZI ROBERTO	2018
Expanding The Mobile VR Experience: Walking Detection And Body Tracking With Worn Sensors	ROSA MATTEO	2019
Reducing Motion Sickness On Mobile Phone Based VR Applications Using 6dof Tracking.	PATTI ALBERTO	2019
Process Algebra For Performance Evaluation	TEKULU ABRAHA WELAY	2019
Extending The Graphical User Interface Of Java Modeling Tools	BORTONE EMMA	2019
Neural Scene Rendering	TOMMASI GIOVANNI	2019
Creating A Simulation Framework For The Hadoop Distributed File System Inside Heterogeneous Cloud Environments By Using Cloudsim	PRIZIO FABIO	2020
A Survey Of Physically Based Deformable Models For Surgical Simulation	DI PAOLANTONIO PAOLO	2020

Parametric Flower 3D Model Retrieval From Single Image With Deep Learning And Procedural Modeling Techniques	MARISCALCO LUCIANO	2020
Low-Cost Virtual Reality Simulation Of Laparoscopy And Thoracoscopy Operations	FUGAZZA MATTIA e CORVINO EMILIO	2020
Fast Communication Training Through Asymmetrical Multiplayer Videogames	GRANDI JACOPO	2021
Physically Based Rendering Of Animated Point Clouds	POZZI MATTEO	2021
Teaching The Science Of Universal Gravitation Through Procedurally Generated Solar Systems	CARUSO MARCO GIUSEPPE	2021
Java Modelling Tools (Jmt) - Queue Transition Connection	ROSMINI SIMONE	2021
Laparoscopic Suturing Training Through A Virtual Reality Low-Cost Simulator	PORTA DAVIDE MARIA	2021
Real-Time Generation Of Ultrasound Images Starting From CT Scans With And Without Neural Networks	SMANIA ANDREA	2021
Mixed Reality In Education: A New Approach Beyond 3D Models	Di MARCO MATTEO	2021
Low-Cost Virtual Reality Simulation Of Medical Ultrasound	ZUCCA DIEGO	2021
Generation Of Synthetic Data From Digital Health Records	COVIOLI TANCREDI	2022
The Application Of Ray Tracing To Efficiently Simulate Fisheye Lenses	ABELLI SIMONE	2022
Ultrasound Simulation with Deformable Mesh Model from a Voxel-based Dataset	STAGNOLI NICCOLO'	2022
HPRL: a cross-platform C++ single header text rendering library	REALE SIMONE	2022
Low cost visualizations of panoramic images in CAVE for in-camera Virtual Production	SCIANNAMEA ANDREA	2022
The application of ray tracing to data acquisition for point cloud reconstruction	CICELLINI RAFFAELE	2022
Finite State Machine for XR: a modular and flexible approach to develop shared eXtended Reality applications	BELIA ANNALISA	2022
Place Queue Connection for Multiformalism models in JMT	TUCCI FRANCESCO	2022
3D object interaction in VR guided by real world discussion: a preliminary study	REGOLI IACOPO	2023