

Antonio Corradi,

Positions

Currently:

Professor of Computer Networks, from 2000

Director of the Campus UNIBO in Buenos Aires (since January 2022)

President of FAM (since November 2021)

Voting member of UNA Europa Alliance (since 2021)

Head of the Association CLUST-ER Innovation in Service (since 2017)

Previously:

Head of the DISI Department (from 2018 to 2021)

Member of UNIBO Senate as Full Professor (from 2018 to 2021)

International delegate for Latin America Relationship for UNIBO (from 2014 to 2018)

Academic Positions

Full Professor of 'Computer Networks', at Bologna Engineering Campus, within the area of Computer Engineering (ING-INF/05) since 2000 for Distributed Systems. Professor with Tenure since 2003.

Beforehand, he has been:

- Associate Professor of 'Computer Science in Engineering', at Bologna Engineering Campus, within the area of Computer Systems (K05A), since 1992.

- Research associate in the area of Computer Science, since 1983.

Antonio provided Academic activities at the **University of Bologna**, within **DISI**, the **Department of Computer Science and Engineering** from 2012, since its establishment. Previously, the activity was within the Department of Electrical Engineering, Computer, and System Science (**DEIS**), since its beginning in 1984 (where it covered the Vice head position from 2009 to 2012).

Degrees

Laurea with honors in Electrical Engineering from the University of Bologna achieved in the Academic year 1979.

Master of Engineering, Electrical, at the Cornell University in 1981, supported by a Fulbright-Hayes grant.

Other previous recognitions and awards

- Laurea in Electrical Engineering, February 1979, "Linguaggi di Programmazione di Sistemi con Attività Concorrenti: Analisi delle Proprietà dei Nuclei", summa cum laude.

- Admission for enrolment to the Italian Engineering Register, 1979.

- 'Cavalieri del Lavoro' Laurea Prize, for tesi and curriculum, 1980.

- FULBRIGHT-HAYES support at the CORNELL University, Ithaca, New York, 1980-81.

- Master of Engineering (Electrical), completed with a thesis on "A Study for an Implementation of a Dynamic Decentralized Load Leveling on a DECnet Network", 1981.

- Fellowship with the 'Elettrotecnica ed Elettronica Institute' of the Milano Polytechnic, for the research: "Project of a kernel to support MML", 1981-82.

- Fellowship awarded by Telettra within the Italian Informatics National project (C.N.R.), objective MUMICRO, "Policies for managing and handling Distributed Systems", 1982-83.

- Private Contracts with Tema, ENI Group, for the dissemination and assessment of ICT, 1982.

Teaching activity

Always within the general area of Distributed Systems, System Support, and Middleware Infrastructures, both basic courses and advanced ones.

- Currently, he teaches:

Computer Network and Operations T (Reti T), First level degree Computer Engineering, third year class (in Italian)

Infrastructures for Cloud Computing and Big Data (ICCBD), Second level degree of Computer Engineering, Laurea Magistrale, first year - the class is in English (before the Academic year 2015-2016, the class was in English as **Computer Networks M**, and previously in Italian, **Reti M**).

Antonio has also taught several other classes, also for 'not engineer' audience: for instance up to the A.Y. 2016-2017: **Master of Marketing, Communications, and New Media** (in English), and several other master initiatives, such as in other Alma Graduate School programs, and in Engineering, and in other different teaching areas activities.

He also tutors for many students in their *final preparation of Thesis work* (both degrees) and coordinates *PhD activities in several technical areas of interest and in interdisciplinary areas*.

Most of those PhDs are either in Academic positions in Italy and other countries, and in many different companies, such as Google, IBM, and other international positions, or also in state-of-the-art Italian companies.

Antonio is part of the steering committees of the several PhD committees, currently of **Computer Science and Engineering**, since 2006. Beforehand, he was part of the steering Committee of the Law and ICT of the University of Bologna (1998-2006).

He also contributed to the design and realization of several Master courses both related to his areas of interests and also with interdisciplinary scopes, such as the **Unicredit supported International Master MBA** (Alma Graduate School, 2007-2008), **Master Management and Information Technology**, the new **Laurea Magistrale of Design**. Some of these classes are in English.

Past and recent classes:

- **Infrastructures for Cloud Computing and Big Data**, Computer Engineering degree (second level, Laurea Magistrale), first year;
- **Computer System organizations and tools**, Computer Engineering degree, third year;
- **Computer Networks**, Old Computer Engineering degree, fifth year;
- **Computer System Programming**, Old Computer Engineering degree, second year;
- **Integration of Heterogeneous Distributed Systems and the Web**, Almaweb Master MTI,
- **Web technologies**, Master in Marketing and new media, Alma Graduate School;
- **Distributed Applications and Network Services**, "System Integrator" Master, COFIMP and University of Bologna (supported by the European Social Fund);
- **Computer Networks and Computer Science Basics II** modules within an e-learning degree, Tele-teaching Diploma of Computer Engineering - Consorzio NETTUNO.

He is also supervising many students at any level, especially in their International experiences; many connections have been consolidated and extensively used for student exchange, among them:

- Prof. Jose Alcaraz-Calero, University of the West of Scotland (UWS), UK;
- Prof. Reda Ammar, University of Connecticut, (UCONN), US;
- Prof. Ken Birman, Cornell University, US;
- Prof. Cristian Borcea, New Jersey Institute of Technology, US;
- Prof. Azzedine Boukerche, University of Ottawa, Canada;
- Prof. Andrew Campbell, Dartmouth College, US;
- Prof. Carlos Roberto de Rolt, UDESC, Brazil;
- Prof. Christos Douligeris, University of Piraeus, Greece;
- Prof. Adel S. Elmaghraby, University of Louisville, US;
- Prof. Nelson Fonseca, University of Campinas, Brazil;

- Prof. Markus Endler, PUC Rio Brazil;
- Prof. Sumi Helal, University of Florida, US;
- Prof. Damianos Gavalas, University of the Aegean, Greece;
- Prof. Mario Gerla, Giovanni Pau, University of California Los Angeles, UCLA, US;
- Prof. Mikael Gidlund – Mid Sweden University, Sweden
- Prof. Theo Kanter, Stockholm University, Sweden;
- Prof. Liviu Iftode, Rutgers University, US;
- Prof. Antonio Loureiro, University of Minas Gerais, Brazil;
- Prof. Thomas Magedanz, TU Berlin, Germany;
- Prof. Apostolos Malatras, University of Fribourg, Switzerland;
- Prof. Gregorio Martinez Perez, University of Murcia (UMU), Spain;
- Prof. Alba Cristina Melo, University of Brasilia, Brazil;
- Prof. Hussein Muftah, University of Ottawa, Canada;
- Prof. Klara Nahrstedt, University of Illinois Urbana-Champaign (UIUC), US;
- Prof. Mario Antonio Ribeiro Dantas, Universidade Federal de Juiz de Fora (UFJF)
- Prof. Sartaj Sahni, University of Florida – CISE, US;
- Prof. Susana Sargento, University of Aveiro, Portugal;
- Prof. Shie-Yuan Wang, National Chiao Tung University, Taiwan;
- Prof. Nalini Venkatasubramanian, University of California, Irvine, UCI, US;
- Prof. Lisandro Zambenedetti Granville, Universidade Federal do Rio Grande do Sul (UFRGS), Brazil.

A service Antonio Corradi is also providing is the activity within Commissions for recruiting people and defining new positions, at several levels in the Italian University and in international organizations: he has been part of commissions for local competitions for local and at National level. He also has taken and takes part as an International expert in the evaluations processes for several colleagues towards their tenure in several International Universities.

He also has served in many commissions for identifying first entry ('assegni di ricerca' and other contract forms) for the employment of people in the first step to work in research connected with University, for several Italian Universities, especially in connection with specific research project needs.

Scientific Activity

His scientific activity has investigated all the aspects of support systems to grant services and different requirements applications and is documented in around 400 papers and communications published in magazines and journals and presented in international and national conferences. In particular, some of the current interests are within the following research areas:

- Parallel Computing, Concurrent Systems, and Optimization of Distributed resources
- Computer Networks, and Distributed Parallel Systems
- Middleware to support distributed heterogeneous applications
- Design and deployment of distributed services with differentiated quality and access
- Infrastructures for secure services in global and open environments
- Middleware to support mobility for users, terminals and resources
- Cloud infrastructure interoperability and scalability
- Smart city support and city integrated planning
- Crowdsourcing and mobile crowdsensing
- Service ecosystems for Industry 4.0, production and after sale
- Models and technologies for dynamic support in ad-hoc network scenarios
- Services and tools for high accessibility in mobile and heterogeneous systems.

Orcid: <http://orcid.org/0000-0002-5107-1023>

At today (**July 2023**) his indicators are:

Scopus h-index h-index 39, 331 pubs, 6844 citations
Google Scholar h-index 49, 598 pubs, 10846 citations
WebofScience h-index **30**, 298 pubs, 3817 citations
(many references missing in WebofScience and PUBLONS)
used to be, 2019 - WebofScience h-index 35, 4742 citations)

Scientific Project Participation

Within his scientific areas of interest, he has taken part to several research projects funded by Italian Organizations, such as Research Ministry, CNR, and International ones, such as H2020, FP7, ESPRIT projects funded by European Community.

Some projects listed below:

Progetti EU:

- EU H2020 ICT-11 Innovation Action, "IoTwins", Coordinator Bonfiglioli Riduttori, Scientific Coordinator Paolo Bellavista (2019-2022).
- EU H2020 NMP Research & Innovation Action, "SimDome", Coordinator UNIBO (2019-2022).
- EU H2020-NMBP-TO-IND-2018-2020 Research & Innovation Action, "OntoTrans", Coordinator TU Wien Austria (2020-2023)
- EU H2020 H2020-DT-2018-2020 Innovation Action, "Change2Twin", Coordinator SINTEF Norway (2020-2023).
- EU FP7 Large-scale IP, FP7 Future Networks Call, "Mobile Cloud Networking (MCN)", Coordinator SAP Germany (2012-2016).
- Artemis Joint Undertaking, Innovation Pilot Project, "Arrowhead Tools", Coordinator Lulea U. Technology Sweden (2019-2022).
- POR-FESR "Sacher project", Coordinator University of Bologna (Rebecca Montanari), European Regional Development Fund, funding no. J32116000120009 (2016-2018).
- European 7th Framework Programme (FP7) Large-scale Integrating Project (IP), "Mobile Cloud Networking (MCN)", Coordinator Dr. Uwe Riss, SAP (Switzerland) AG (2012-2017).
- Artemis Joint Undertaking, Innovation Pilot Project, "Arrowhead", Coordinator Lulea U. Technology, Sweden (2013-2016).
- Artemis Joint Undertaking, Sub-Programme 3, "Internet of Energy for Electric (IoE) Mobility", Coordinator SINTEF, Norway (2011-2014).
- European ICT Work Programme of the 7th Framework Programme for Research and Technological Development, "Cooperative Self-Organizing System for low Carbon Mobility at low Penetration Rates (COLOMBO)", Coordinator Dr. Daniel Krajzewicz, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Berlin, Germany (2012-2015).
- Progetto ParticipAct, "ParticipAct: una piattaforma di crowdsensing su larga scala", Programma Operativo Regionale del Fondo Europeo di Sviluppo Regionale 2007-2013 (POR FESR 2007-2013) within the research of the technopoles CIRI ICT, Coordinator Antonio Corradi (2015-2017).
- European Institute of Innovation and Technology: EIT ICT Labs, University of Bologna as part of the Italian node of the KIC initiative for the future information and communication society (2011-2016).
- European Artemis programme, Joint Technology Initiative (JTI), Project Title: "SCALOPES SCALable LOW Power Embedded Platforms" (2009-2012).
- European Artemis programme, Joint Technology Initiative (JTI), Project Title "Smart Objects for Intelligent Applications (SOFIA)", within the subprogramme SP3 "Smart environments and scalable digital services", Coordinator Petri Liuha (Nokia Finland) (2009-2012).
- MIUR Negotiated Project FIRB, Strategic Program Enabling Technologies for the Information Society Objective 2: Networks and Net-computing, "TOCAI: Knowledge-oriented Technologies for Internet-based Enterprise Aggregation" (2006-2008).
- LEPIDA STREAM Project, Integration of Multichannel DVB and Internet, together with Emilia Romagna Region (2007-2009).

- PIA Networking, Ministry of Economy, Zefiro Project, *Project and Evaluation of an Integrated Middleware for Provisioning of Nautical Integrated and Pervasive Services* (2007-2008).
- Emilia Romagna ICT Program, Research and Development toward the Information Society, Initiative 1.1, "SWIMM - *Project, Development and Deployment of a Middleware to support Mobile and Multimodal Services*" (2004-2007).
- Progetto MURST "MUSIQUE: *Infrastruttura per QoS in servizi Web Multimediali ad Accesso Eterogeneo*" (2000-2002).
- Coordinated C.N.R. Project, "Multimedia Services for Distributed Environments: a standard Architecture" (2001-2002).
- Strategic Project of the Bologna University, "The Design of the Infrastructure to develop Secure Services" (1999-2001).
- Italian MURST "MOSAICO", Subproject 'Network Computing', (1997-99);
- EU Projects HORIZON (1995-96), GOAL (1996-97), TEAMNET (1997-98) *toward the guidelines for the Employment of Disable people via ICT technologies*, together with ASPHI;
- Project 'Enabling the employment for Disabled people, the ICT role', IBM Foundation and ASPHI, together with Ausilioteca and Nomisma, (1994-95);
- International Bilateral CNR Project: Dynamic Load Balancing based on Parallel Objects for Massively Parallel Architectures (1994-96), together with the University of Leuven;
- ESPRIT 'Human Capital and Mobility', network on: "Molecular Dynamics Simulation of Complex Molecular Systems on Massively Distributed Memory Architectures" (1993-95).
- Italian National Project: Information Systems and Massively Parallel Computation, 'Subproject 3 – Parallel Architectures', "Support for Massively Parallel Architectures based on Object Models" (1990-95);
- ESPRIT 'Parallel Computing Action', Project SEMPER n. 4028, 'Basic Environment to Support Massively Parallel Architectures' (1990-92).
- ESPRIT Project n.1226, DELTA-4: 'The definition and the design of an Open Dependable Distributed System' (1987-89).
- ESPRIT Project, N.874, CONCORDIA: 'An Integrated Environment to support CONstruction and Operation of Reliable Distributed systems and Applications' (1985-86).

International and Local Activity

Antonio is actively involved in many IEEE and ACM professional activities.

Since 2013 he is an associate editor of ACM Computing Survey.

Since 2019 is an Associate editor of Sensors (Open access, MDPI).

Antonio also acts as a reviewer for several forums, both international magazines/journals (IEEE, ACM, Elsevier) and conferences (IEEE, ACM), and has participated in several technical committees, both in magazines/journals and in the organization of several international conferences and workshops. Some examples are:

- IEEE Communications Magazine;
- IEEE Communications Letters;
- IEEE Network Magazine;
- IEEE Journal on Selected Areas in Communications;
- IEEE Wireless Communications;
- IEEE Transactions on Computers;
- IEEE Security and Communication Networks;
- IEEE Transactions on Cloud Computing;
- IEEE Transactions on Mobile Computing
- IEEE Transactions on Knowledge and Data Engineering;
- IEEE Transactions on Intelligent Transportation Systems;
- IEEE Transactions on Industrial Informatics;
- IEEE Transactions on Parallel and Distributed Systems;

- IEEE Transactions on Systems, Man, and Cybernetics;
- IEEE Pervasive Computing;
- IEEE Sensors Journal;
- ACM Computing Surveys;
- ACM/Springer Journal on Mobile Networks and Applications;
- ACM Transactions on Autonomous and Adaptive Systems;
- ACM Transactions on Internet Technology;
- ACM Transactions on Computer Systems;
- Elsevier Journal of Parallel and Distributed Computing;
- Elsevier Computer Communications Journal;
- Elsevier Computer Networks Journal;
- Elsevier Computer and Electrical Engineering;
- Elsevier Journal of Systems Architecture;
- Elsevier Journal of Network and Computer Applications;
- Elsevier Journal of Internet Services and Applications;
- Elsevier Journal of Systems and Software;
- Elsevier Microprocessors and Microsystems (EMBEDDED HARDWARE DESIGN);
- Elsevier Pervasive and Mobile Computing Journal;
- Elsevier Future Generation Computer Systems;
- Elsevier Ad Hoc Networks Journal;
- Springer Journal of Network and Systems Management;
- Springer Journal of Internet Services and Applications;
- Springer Neural Processing Letters;
- Oxford Computer Journal;
- Wiley International Journal of Communication Systems;
- Wiley Transactions on Emerging Telecommunications Technologies;
- World Scientific International Journal of Information Technology & Decision Making.

Since 2005, he is part of steering committee of 'ISCC, IEEE International Symposium on Computers and Communications', CQR, IEEE International Workshop on Communications Quality and Reliability (since 2003).

He also devotes time for technical activities for several major conferences and workshops with organization and reviewing, such as for:

- ACSAC, Annual Computer Security Applications Conference,
- ACM Q2SWinet,
- Cloud Computing,
- AICT conference,
- IEEE CNOM,
- CONTEXT conference,
- ICACCI conference,
- ICC conference,
- ICDCS conference,
- ICDIM conference,
- PERCOM, Pervasive Communications,
- INFOCOM,
- NFV-SDN conference,
- Kaleidoscope conference,
- PEC, international conference on Pervasive and Embedded Computing,
- RTSI forum,
- WoWMom, International Symposium on a World of Wireless, Mobile and Multimedia Networks;
- International Conference on Network and Service Management;

- HPCC, Int. Conf. on High Performance Computing and Communications;
- IAMOT, Int. Conf. of Association of Management of Technology;
- HotP2P, Hot Topics in Peer to peer conference;
- SIIT, Int. Conf. on Standardization and Innovation in Information Technology.

Antonio is member of IEEE, ACM and AICA.

Local Activity and Technology Transfer

Currently, with the new UNIBO governance (2015-2021, from 2015-2018) he has been appointed for the Internationalization of the entire University of Bologna for the Latin America exchange.

He has also been elected the Head of his Department (2018-2021) and, in that role; he has been elected for the UNIBO Academic Senate in the UNIBO governance.

As intramoenia local Activities and mainly within Engineering, Antonio has contributed with many projects at different levels, such as the promotion of Web Services for the Engineering Students, the design of a wireless infrastructure to provide ubiquitous services to students and staff within the Engineering Campus, the provisioning of novel teaching services via e-learning tools "E-learning within Engineering".

In the last seven years, ha has taken a leading role in the activity of internationalization of UNIBO and its Department. He was delegate for the internationalization within the DISI, and taken part to many initiatives for innovation. He still follows the internationalization issue for DISI.

Antonio is deeply involved in Institutional duties, within his School, Department, and University and toward the territory reality.

In the last few years, Antonio Corradi has been deeply working in the innovation and technology transfer activity, toward both the local environment and the international one. He is the *head of the Bologna unit of the ICT CIRI*, particularly focused on promoting innovation and technology transfer in the field of the automation and the intelligent management of business processes and on facilitating the development of novel high-tech ICT products through several technology transfer activities.

Those CIRI centers are **Interdepartmental Centers to support Industrial Research (CIRI)** within the framework of the **Emilia-Romagna Technopoles and High Technology Network**; those centers represent the organization counterpart of the University of Bologna, to govern and implement *technology transfer* and *innovation*. The Technopoles Project is co-funded by the 2007-2013 ERDF Regional Operational Program, and is the further step of the Regional High-Technology Network made up of 45 industrial research laboratories and innovation centers, organized in thematic platforms: agriculture and food, construction, energy and environment, ICT and design, mechanics and materials, life sciences.

He is the *technical chair of the CIRI ICT*, responsible of the Bologna part, since its first establishment, in 2011. Within that organization, he signed and started several contracts and projects, with many local and national companies, such as Telecom, Solair, Imola group.

In 2016, he was the **delegate for the Emilia Romagna High Technology Network ICT and Design**.

Starting in 2016, Antonio has contributed to the process of re-discussing the **Emilia Romagna S3** (*The local Smart Specialization Strategies according to the EU platforms*). Antonio has determined the adoption of a new direction for S3 for the Emilia Romagna region, the Service Innovation platform that has been added to the already defined second generation initiatives called CLUST-ERs.

He became in 2017 the **President of the Service Innovation Cluster** and elected in July 2018 for a term of three years. The CLUSTER INS organized five differentiated Value Chains to determine the most interesting topics for the territory (2017):

SCABIS - SCALable Big data Infrastructure for innovative Services

ER-IoT - Service platform for IOT

CySEC - Cybersecurity

Intell_ITS - Intelligent IT Services

Log-ER – Good Logistic.

Those CLUST-ERs have the goal of leading the main technology transfer and innovation strategies for the entire Emilia Romagna region, toward a better development of the territory and toward a progress in synergic action of the RER innovation. CLUSTERS consider both Academic laboratories and private one, small and medium size company, large companies and startups to drive and enhance the region trajectory forward to the best Europe integration.

A recent action has been the identification of several finer grained Strategic Objectives to drive the innovation for next triennium and next POR FESR call in Emilia Romagna.

The SO have been defined in the larger interacting paths of:

1. Scalable and Intelligent Services for Smart Cities
2. IoT and Cybersecurity
3. Innovative Services and Big Data for Smart Industry 4.0
4. Smart IT Services for SME
5. E-commerce and last mile delivery in city center
6. Disruptive Logistics
7. AI and ML for Industry 4.0
8. Intelligent Service Platforms for ICT companies
9. Cross-industry Deployment of the Blockchain Technology.

In these recent years, he has participated and coordinated several projects promoted by local organizations with industrial funding. His activity spans from collaboration with students that work toward their thesis and with stage periods within industries to common projects in areas of technical interests for selected common topics: such as Distributed Systems Security, Management of internet and intranet network, New infrastructures for the integration of Web Services. That activity is often supported by with specific industrial grants directed toward the achievement of specific goals; see the following ones for recent examples.

The involved Industries are both local and National and International ones, such as CPG, EASCON, Engineering, DIANOEMA, HP, IBM, SOGEI, TEMARS, Nokia, ENAV, OT Consulting, Tissue Machine Computing, Chloride, Jakala, Imola grup, SACMI, Maccaferri, etc.

- 'Semantic Middleware support for collaboration in pervasive environments', Nokia Grant;
- 'Embedded Systems and Geographic Distribution and Allocation', Chloride Grant;
- 'Design and Implementation of Secure Architectures', TMC Grant;
- 'BPM and Flow Systems', OT Consulting;
- 'Distributed Systems and Service Design and Integration', Bologna Local Authority Grant;
- 'Project and Evaluation of an Integrated Middleware for Provisioning of Nautical Integrated and Pervasive Services', Zefiro Consortium;
- 'En Expert System for the rehabilitation and reintegration of Disability – Anastasis Grant, Objective 1 "Actions for Local Development of Industrial and Strategic Research", SERE-NA Project;
- 'Mobile Agents Middleware for service deployment to wireless heterogeneous devices', Jakala;
- 'Discovery services and resources in multi hop networks', Telecom 2011-2014;
- 'Support to QoS resources via Cloud adoption', Lepida, 2011-2012;
- 'Analysis for the validation of the Coflight Project', ENAV – Sicta, Selex 2008;
- ENAV audit for the 'Coflight Project and International Avionic systems', 2014-2015.
- Mollusco e Balena, "mobile Apps Android for PrestaShop in a CRM perspective", Dec. 2014-Nov. 2016.
- Nethical/Vitaeever, "Progetto di Architetture e Algoritmi per la sicurezza di dati sensibili nel Cloud computing pubblico" a non standard support for home assistance, 2012-2016.

With regard to innovation and innovative initiatives, Antonio got some recent milestones

FIBRA foundation member (2015- current)

<http://www.irtbrasil.unibo.it/en/partnerships/fibra>

FIBRA is an Italian-Brazilian Cultural Foundation with the objectives of the promotion of studies and research on Brazil and the spread of the Brazilian culture in all forms of expression in Italy.

I was part of the foundation, since 2015.

FIBRA promotes the creation and the development of any initiative between UNIBO and Brazil in any field of study, to favor the cooperation between the University of Bologna and Brazilian universities, and to support the academic mobility and the cooperative studies and research on the Brazilian reality (such as a reader of Portuguese at the University of Bologna).

FIBRA supports many mobility actions, also a 'Catedra CAPES' together with Itamaraty for a annual mobility of a Brazilian Scholar to UNIBO.

Recently, **FIBRA** also stimulated research cooperation of Academy with companies in the Italian and Brazilian territory, by financing a call for projects internal to Unibo (FIBRA projects for 100,000 Euros), to further develop the collaboration between Unibo and Brazilian universities, by also implementing active cooperation with companies, in particular companies with interests both in Italy and in Brazil. The call has selected seven projects, which completed and were all completed successfully, respecting all initial plans.

In 2017, FIBRA has allowed to design and implement an agreement framework of the University of Bologna called **MCI (Mobility CONFAP Italy)**, for the management of researcher mobility, between Brazilian universities and Italian universities, as a follow up of the suspended Ciências Sem Fronteiras (Science without Border).

https://pt.wikipedia.org/wiki/Ci%C3%AAncia_sem_Fronteiras

CONFAP is the national agency to support the research in Brazil as a financing counterpart in Brazil. UNIBO started, represented and led the Italian Universities of the consortium MCI.

The **MCI** framework was first activated in 2017 and led to finance the mobility of research on different levels of study (from Master/Laurea degree to PHD) and symmetrically, from Brazil to Italy and from Italy to Brazil (in 2017, 29 mobilities to Italy, 6 to Bologna). The program goes on.

<http://www.mci.unibo.it/en>

Open Innovation Lab OIL (2016-on)

<http://www.oilab.it/home-en/>

In 2016, we have created the **Open Innovation Lab**, an initiative for *technology transfer and open innovation between the University of Bologna and the Imola territory*. The OIL is a project promoted by University of Bologna and Imola Informatica to improve the connection between the world of research, and local businesses and authorities. The main goal is to create an **open, free technological innovation ecosystem** in order to develop and advance the local communities, in the direction of the state-of-the-art IT topics, mainly connected with Industry 4.0 and innovation.

The OIL offers opportunities for the whole potentially interested community: researchers and students of all levels, for update and tune themselves, business partners, for presenting activity and connect, for interested people and local governance, to present ideas and opportunities.

OIL has promoted *several events and activities to boost the non-traditional lab itself* (see site) and aggregated many *companies at national and international level*.

UNIBO-UDESC Joint Lab on Big Data for Industry 4.0 (2017-2019 and following)

<https://jolbi.disi.unibo.it/>

We put together the UDESC-UNIBO **Joint Lab on Big Data for Industry 4.0**, a project to put together researchers and companies from Brazil and Italy, Bologna, on the topics of big data for Industry 4.0

and innovation. The Lab deals with *technology transfer, knowledge management, use of private data, software licenses, product and service patents, plus other economic issues to master for any common cooperation*. Its main mission is a *feasibility study*, toward a novel ecosystem that can establish common research themes with private companies, universities, and public research institutes, and can produce common research outcomes, by expecting higher efficiency and synergistic effects. The Joint Lab achieved the objectives by holding events, by work meetings, by workshops, courses, advanced studies, specific projects, systems implementation, etc.

The activities are on demand of the Joint Lab members, and have been given either face-to-face or virtual. The FIBRA Foundation supported this project that involved not only UNIBO and UDESC, as Universities, but also several companies, such as Neoway, Engineering do Brazil and Imola Informatica. Also, local governance in Italy and in Brazil has been involved in the initiatives that took place in both countries.

The Joint Lab has a management system with double coordination management:

in Italy, Region Emilia-Romagna (RER), University of Bologna – UNIBO, of Prof. Antonio Corradi

in Brazil, State of Santa Catarina (SC), State University of Santa Catarina – UDESC, of Prof. Carlos Roberto De Rolt.

Print projects connections for UNIBO (2018-2021)

Responsible for the Print at the University of Bologna.

Brazilian CAPES has launched in 2017-2018 a new program, **Print**, as a follow up of Science without Border for promoting internationalization and mobility of Brazilian students and scholars, to implement and consolidate strategic plans of Brazilian University for internationalization of the institutions in any areas of knowledge. The Print is a very long-term financing for 4 years mobility with a large support (80MEuros per year): the University of Bologna is very interested in stimulating Brazilian partner University and we operate along that deadline.

CAPES contacted UNIBO to advice about the framework and we promoted the program for any area of the University of Bologna, so to take advantage of the already existing connections and to establish new ties and common interests.

The projects involved most important Brazilian Universities and research organizations and now the results for the framework have appeared. Italy has been designated as a partner in almost all approved projects (34 out of 36), and the University of Bologna has been involved with most important ones.

Summer school EIT Digital (from 2019 on Industry 4.0 and innovation) (2019-)

Coordinator of the Summer School.

We have designed a Summer school for EIT Digital, a KIC initiative that support at the EU level technology transfer for University, both in Education and research. The summer school is going to given any year on with the idea of education on the topics of Industry 4.0, innovation and Big Data.

<https://www.eitdigital.eu/>

The Summer school is on **Data-driven manufacturing with Industry 4.0** and tookplace in July-august 2019, in Bertinoro at the University of Bologna, open to all students of the EIT Master and to any interested student. It was a big success and the most populated school of the EIT Digital: we had 20 external students coming from the local territory.

The summer school will provide for two weeks an *effective study environment* through the **Open Innovation Lab concept** we use already in the area of Bologna, by putting together students, university, and companies, in a unique community toward the advancement of the whole I4.0 ecosystem via collaborative interaction between all potential cooperating actors. Moreover, informal meeting with the entrepreneurial local community occurred in order to foster exchange and generate new business ideas. Traditional classes mixed with other less formal teaching activities, more active and participated, by merging different ways of involving students. The digital challenge is also

objective of the Summer School effort, by promoting a new way of looking at the digital transformation of I4.0 and enhance the new opportunities.

New conference proposal on Technology transfer 2020 - (2020 and 2022)

We propose a new IEEE conference hold in Europe and in Bologna regularly, starting from April 2020, associated with TEMS group.

<https://icte.ieee-tems.org/>

Together with Michael W. Condry, President of IEEE Technology and Engineering Management Society (TEMS), and Bruno Iafelice, we are designing the initiative: International Conference on Technology and Entrepreneurship, the first edition is on: Connecting IoT, AI, the Cloud with Entrepreneurship.

The main objective is to have in Bologna a forum that can attract both researchers of any areas connected with the new IT technologies and innovation processes at the state of the art, and all practitioners and companies interested in the changed global marketing strategies as well in discovering new application areas. Now, IoT, Big Data, and Cloud give unprecedented opportunities for managing and taking advantage of information, to predict and make smart decisions, very significant for entrepreneurs to build products to make advanced solutions for biomedical systems, transportation, education, manufacturing, agriculture, and many other areas. The conference has the goal of putting all these stakeholders together regularly.

Higher education Project on Industry 4.0 (2020-2022)

Innovation in education is an important direction (a Regione Emilia Romagna RER funded project - Service and Innovation for Industry 4.0 - SII40 <https://sii40.ing.unibo.it/>), in particular, after COVID that motivated many new trends and pushed for novel wide experiment and tests. The SII40 has the goal of mixing new strategies of education that can in-presence and online experiences and different exposures, and also a differentiated audience consisting both of IT students and workers already working in company and of different experience: the challenge is to make them mix their experience in common project, provided both in presence and remotely. The first edition in Bologna registered the interest of both company people and students, who appreciated the idea of having recorded material produced by international experts before the real synchronous classes, in which the discussion and start with a background already explored. In addition, the project work done in the weekend was a success in mixing experiences and new attitudes. A second edition is finishing before Summer 2023 in Ferrara (UNIFE); two next editions are un preparation for the University of Modena (UNIMORE) and Parma (UNIPR).

Some selected publications

Antonio has published around 400 papers, in International Journals and magazines, and in International and National Conferences and workshop.

In the following, we report some of the papers he has published in International Journals in the last ten years:

- [1] L. Rosa, L., Foschini, A. Corradi
"Empowering Cloud Computing With Network Acceleration: A Survey"
IEEE Communications Surveys and Tutorials, DOI: 10.1109/COMST.2024.3377531,2024
- [2] Jawarneh, I.M.A., Bellavista, P., Corradi, A., Foschini, R. Montanari
"SpatialSSJP: QoS-Aware Adaptive Approximate Stream-Static Spatial Join Processor"
IEEE Transactions on Parallel and Distributed Systems, 35(1), pp. 73–88, DOI: 10.1109/TPDS.2023.3330669, 2024,
- [3] A. Sabbioni, A. Garbugli, L. Foschini, A. Corradi, P. Bellavista
"Serverless Computing for QoS-effective NFV in the Cloud Edge"
IEEE Communications Magazine, DOI: 10.1109/MCOM.001.2300182, **2023**
- [4] D. Scotece, A. Noor, L. Foschini, A. Corradi
"5G-Kube: Complex Telco Core Infrastructure Deployment Made Low-Cost"
IEEE Communications Magazine, (Early Access) 1 – 7, Print ISSN: 0163-6804
 Electronic ISSN: 1558-1896, DOI: 10.1109/MCOM.006.22006932023, 2023.
- [5] A. Garbugli, A. Sabbioni, A. Corradi, P. Bellavista
"TEMPOS: QoS Management Middleware for Edge Cloud Computing FaaS in the Internet of Things"
IEEE Access, vol. 10, pp. 49114-49127, DOI: 10.1109/ACCESS.2022.3173434, 2022.
- [6] A. Sabbioni, L. Rosa, A. Bujari, L. Foschini, A. Corradi
DIFFUSE: A Distributed and decentralized platForm enabling FUnction composition in Serverless Environments
Computer Networks DOI: <https://doi.org/10.1016/j.comnet.2022.108993>, V. 210, 2022
- [7] A Sabbioni, T. Villano, A. Corradi
An Architecture for Service Integration to Fully Support Novel Personalized Smart Tourism Offerings
Sensors, 22(4), 1619; DOI: <https://doi.org/10.3390/s22041619>, 2022.
- [8] L. Patera, A. Garbugli, D. Scotece, A. Corradi
 A Layered Middleware for OT/IT Convergence to Empower Industry 5.0 Applications
Sensors, 22(1), 190; DOI: <https://doi.org/10.3390/s22010190> 2022.
- [9] A Corradi, G Di Modica, L Foschini, L Patera, M Solimando
"SIRDAM4.0: A support infrastructure for reliable data acquisition and management in industry 4.0"
IEEE Transactions on Emerging Topics in Computing, (Early Access),
 DOI: 10.1109/TETC.2021.3111974

- [10] P. Bellavista, A. Corradi, A. Edmonds, A. Zanni, T.M. Bohnert,
 "Elastic Provisioning of Stateful Telco Services in Mobile Cloud Networking"
IEEE Transactions on Services Computing, 2021, 14(3), pp. 710–723, 8336982
 DOI: 10.1109/TSC.2018.2826003
- [11] I.M. Al Jawarneh, P. Bellavista, A. Corradi, L. Foschini, L.,R. Montanari
 "Efficient QoS-Aware Spatial Join Processing for Scalable NoSQL Storage Frameworks"
IEEE Transactions on Network and Service Management, 2021, 18(2), pp. 2437–2449,
 9241229,
 DOI: 10.1109/TNSM.2020.3034150
- [12] M. Mazzone, A. Corradi, V. Di Nicola
 "Performance evaluation of permissioned blockchains for financial applications: The ConsenSys
 Quorum case study"
Blockchain: Research and Applications, <https://doi.org/10.1016/j.bcr.2021.100026>
- [13] P. Bellavista, M. Torello, A. Corradi, L. Foschini
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- [14] I.M. Al Jawarneh, I. Mashhour, P. Bellavista, A. Corradi, L. Foschini, R. Montanari
 "QoS-Aware Approximate Query Processing for Smart Cities Spatial Data Streams"
Sensors 21 (12), 4160
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 "Big Spatial Data Management for the Internet of Things: A Survey"
Journal of Network and Systems Management, 1-46, 2020
- [16] D. Belli, S. Chessa, A. Corradi, L. Foschini, M. Girolami,
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- [17] P. Bellavista, J. Berrocal, A. Corradi, S. Das, L. Foschini, I. M. Al Jawarneh, A. Zanni
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 "Virtual Environments as Enablers of Civic Awareness and Engagement"
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For additional updated details go to the URL: <https://www.unibo.it/sitoweb/antonio.corradi/en>

The above information has been finalized the 4th of April 2024.

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