

PERSONAL INFORMATION

Andrea Bonci



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Sex Male | Date of birth - | Nationality Italy

POSITION

Associate Professor
 Sector ING-INF/04 – Automatica (Control and Automation Engineering)

WORK EXPERIENCE

- Since 2021 **National Scientific Qualification as Associate Professor**
 Holder of National Scientific Qualification as Associate Professor in the sector 09/G1 "Automatica"
- Since 2006 **Tenured Assistant Professor**
 Università Politecnica delle Marche (Polytechnic University of Marche) – Ancona (Italy)
<https://www.univpm.it>
 Department of Information Engineering (DII), – Via Breccie Bianche, 12, 60131, Ancona (Italia)
<https://www.dii.univpm.it>
 Professor for the Science degrees in Computer Engineering and Automation, for the courses of:
 - Automation Laboratory (Bachelor of Science degree)
 - Dynamics and Control of Intelligent Robot and Vehicles (Master of Science degree)
 Sector ING-INF/04 – Automatica (Control and Automation Engineering)
- Since 2015 **Head of the Automation Laboratory**
 Research and teaching laboratory at the Department of Information Engineering (DII) – Via Breccie Bianche, 12, 60131, Ancona (Italy) , Università Politecnica delle Marche – Ancona (Italy)
<https://www.dii.univpm.it/laboratori#16>
<https://www.univpm.it/http://www.dii.univpm.it/AutLab>
- Since 2023 **Work as an Expert for evaluation of European projects**
 Legal entity: EU Commission
 Membership number on EU experts database: EX2021D440114
 Period: since May 2021
 Skills and areas of specialisation as an evaluator: Artificial Intelligence systems, Automatic control; Control engineering [Automation and control systems], Cyber Physical Systems; human-centered manufacturing; industrial automation; Industry 5.0; Industry4.0; Robotics.
 Evaluator of the Calls:
 - Horizon Europe Work Programme 2024-2025 (MSCA-PF Marie Skłodowska Curie Postdoctoral Fellowships), Call: HORIZON-MSCA-2024-PF-01
 - Horizon Europe Work Programme 2023-2024 (MSCA-PF Marie Skłodowska Curie Postdoctoral Fellowships), Call: HORIZON-MSCA-2023-PF-01
 Selected Expert:
 - Member of the board of experts for DG CNECT's EU critical digital technologies studies. To develop the EU's strategic roadmap for next generation of emerging and critical digital technologies and capabilities in the programming period (2028-2040).
 Invited evaluator of the Calls:
 - Horizon Europe (Cluster 5: Climate, Energy and Mobility), Call: HORIZON-CL5-2024-D5-01:

Clean and competitive solutions for all transport modes,
Topic call: HORIZON-CL5-2024-D5-01-05: Advanced digital development tools to accelerate the development of software defined vehicles that enable zero-emission mobility (2ZERO Partnership).

- Horizon Europe Work Programme 2023-2024, (Cluster 5: Climate, Energy and Mobility) Call: HORIZON-CL5-2023-D5-01 - Clean and competitive solutions for all transport modes,
Topic call: HORIZON-CL5-2023-D5-01-05 Measuring Road transport results towards 2ZERO KPIs (2ZERO Partnership).

From 2023 to 2025 **Principal Investigator of the Horizon EU Project “EDIH4Marche”**

Principal Investigator and principal contact of Università Politecnica delle Marche, Ancona, (Italy)

European project Horizon Europe on topic DIGITAL-2021-EDIH-INITIAL-01 (DIGITAL Simple Grants Acton) "EDIH4Marche: European Digital Innovation Hub for Marche" (Call DIGITAL-2021-EDIH-01, Grant Agreement no. 101084027)

From 2019 to 2022 **Principal Investigator of the H2020 EU Project “ENCORE”**

Principal Investigator and principal contact of Università Politecnica delle Marche, Ancona, (Italy)

European research project H2020 (RIA – Research and Innovation Acton) "ENCORE: Energy aware BIM cloud Platform in a COst effective Building RENovation Context" (H2020 NMBP-ST-IND-2018-2020, Grant Agreement no. 820434)

From 2019 to 2024 **Vice-Coordinator in regional macro-node of the Competence Center ARTES 4.0**

Holds the role of Vice-Coordinator of the regional macronode of the National Industry 4.0 Competence Center named ARTES 4.0 (it is one of the eight National Competence Centers Industry 4.0 funded by the MISE – Ministry of Economic Development).

From 2019 to 2021 **Head of the outgoing students Guidance Advisory Committee from the Faculty of Engineering at Università Politecnica delle Marche**

Holds the role of head of the Guidance Advisory Committee of the outgoing students from the Faculty of Engineering. This committee has the purpose of facilitate contacts between companies and students.

From 2019 to 2021 **Member of the "Permanent coordination board of Enterprise 4.0"**

Representative member of Università Politecnica delle Marche at the "Permanent coordination board of Enterprise 4.0" in the smart specialization strategies of the Marche Region (Italy). Rectoral appointment Prot. n. 0047628 del 19/07/2019.

From 2018 to 2021 **Team Manager of i-Labs – Laboratory for technological transfer of Industry 4.0 technologies and collaborative Robotic**

Holds the role of Team Manager of the laboratory devoted to the technological transfer of Industry 4.0 technologies and collaborative robotics. The laboratory, named **i-Labs** (<https://www.i-labs.it/it>) was born from the competitive regional call for proposal won by the project "H3DFLAB: Laboratory of the Digital Future Factory, flexible and human-oriented", of which He was among of the promoters of the winning proposal.

From 2022 to 2025 **Team Manager of i-Labs Industry SCaRL - technology transfer company for Industry 4.0 and Collaborative Robotics technologies**

He holds the role of Team Manager of the company i-Labs Industry SCaRL address: via Guerri 7, 60035 Jesi (AN), IT. The company is a technology transfer hub for Industry 4.0 and collaborative robotics technologies, (<https://www.ilabsindustry.it/>).

- From 2018 to 2021** **Member of the OCG of the Cluster Marche Manufacturing**
 Member of the Management and Control Unit (OCG) of the Cluster Marche Manufacturing association. The Cluster Marche Manufacturing is a private public partnership (PPP) made up of Universities, Research Institutes and Companies that work together to study the needs of manufacturing field under the guidelines defined by the national cluster Smart Factory.
- Since 2018** **Delegate responsible for Industry 4.0 issues at Polytechnic University of Marche**
 Delegate responsible for Industry 4.0 issues of the Polytechnic University of Marche, Ancona, Italy.
- Since 2018** **Member of the Organizing Committee of the postgraduate course "Industry 4.0 Architectures, Processes and Technologies"**
 Member of the Organizing Committee of the postgraduate course "Industry 4.0 Architectures, Processes and Technologies". The course aims at training qualified technicians on the new technologies enabling Industry 4.0.
- From 2021 to 2022** **Member of the committee "Evaluation for assignment of salary classes to professors and researchers of the University"**
 Member of the evaluation committee for the assignment of salary classes to professors and researchers at the Polytechnic University of Marche, the committee is made up of professors and researchers of the University and has the task is to define the new salary classes for professors and researchers.
- From 2017 to 2021** **Member of the working group "Mechatronics and sustainable manufacturing"**
 Representative for Polytechnic University of Marche at the working group in the field of "Mechatronics and sustainable manufacturing" in the smart specialization strategies of the Marche Region (Italy).
- Since 2022** **Member of the Academic Board of the PhD DRIM - Doctoral on Robotics and Intelligent Machines.**
 Member of the Academic Board of the PhD program DRIM - Doctoral on Robotics and Intelligent Machines – representative delegate for Università Politecnica delle Marche (Italy).
- Since 2017** **Member of the Academic Board of the PhD program in Information Engineering**
 Member of the Academic Board of the PhD program in Information Engineering at the Department of Information Engineering (DII) at Università Politecnica delle Marche (Italy).
- Since 2006** **Permanent member of the Unified Course Council (CUCS) of the Computer science and Automation Engineering Degree Course**
 He is a permanent member of the Unified Course Council (CUCS) of the computer science and Automation Engineering Degree Course and has been a member of the CUCS of the Electronic Engineering Degree Course of the Marche Polytechnic University
- From 2005 to 2006** **Research fellowship**
 Sensor Data Integration for Navigation Guide and Control of Mobile Robot
 Supervisor Prof. Tommaso Leo (from June 01 2005 to May 31 2006)
 Department of Information, Management and Automation Engineering (DIIGA)- – Ancona (Italy)
 Università Politecnica delle Marche – Ancona (Italy)
- From 2004 to 2005** **Research fellowship**

Control systems for autonomous vehicles (mobile robot)

Supervisor Prof. Tommaso Leo (from June 01, 2004 to May 31, 2005)

Department of Information, Management and Automation Engineering (DIIGA)- – Ancona (Italy)

University of Ancona – Ancona (Italy)

From 2002 to 2003

Research fellowship

Control systems for autonomous vehicles (mobile robot)

Supervision Prof. Tommaso Leo (from Dec. 01, 2002 to Nov. 30, 2003)

Department of Information, Management and Automation Engineering (DIIGA) – Ancona (Italy)

University of Ancona – Ancona (Italy)

From 2000 to 2002

Research fellowship

Control systems for autonomous vehicles (mobile robot)

Supervisor Prof. Tommaso Leo (from Nov. 01, 2000 to Oct. 31, 2002)

Department of Information, Management and Automation Engineering (DIIGA) – Ancona (Italy)

University of Ancona – Ancona (Italy)

EDUCATION AND TRAINING

From -1998 to 2001

Ph.D. Degree in Artificial Intelligent Systems

Department of Electronic Engineering – University of Ancona – Ancona (Italy)

- Graduation date: 03/03/2001
- Thesis entitled: “Data Fusion and Sensor Integration for Navigation Guide and Control of autonomous mobile robots”
- Supervisors: Prof. Tommaso Leo, Prof. Sauro Longhi

Since 1998

License to practice as Engineer

Member of the Professional Order of Engineers of the Provincia di Ancona (IT) n. 1902

July 16 1997

Master of Science Degree in Electronic Engineering (Italian “Laurea” degree, equivalent to joint BSc + MSc degrees) - specialization in Automatic Control

University of Ancona – Ancona (Italy)

Thesis entitled “*Time-varying MIMO Observer for VSC controller of an autonomous vehicle*” under supervisor: Prof. Tommaso Leo.

SCIENTIFIC RESEARCH ACTIVITY

Since-1998

Short summary of the research activity

His experiences in research and technology transfer range from automatic control to industrial automation systems up to autonomous and intelligent systems. His research interests in the automation field include systems and control theory, robotics, control of mechatronics systems, nonlinear system dynamics and control, modeling and control of dynamical systems, sensor fusion. In industrial context instead research and development interests concern Cyber Physical Systems, smart manufacturing and Industry 4.0, KPIs for intelligent manufacturing, Predictive Maintenance, smart materials, new technologies for the factory of the future, industrial applications of automation, robotics, mechatronics, and automation in constructions. Lastly, interests in autonomous and intelligent systems are focused on modeling and control autonomous systems, autonomous vehicles, vehicle dynamics, intelligent robotics, unmanned aerial and ground vehicles, sensor and data fusion, multi-sensor fusion,

embedded control systems. Currently he is head of the Automation Laboratory at Polytechnic University of Marche. He is also deputy coordinator of the regional Macro node of the Industry 4.0 National Competence Center ARTES 4.0, funded by National Ministry of Economic Development (MISE). He is team manager of the "i-Labs" laboratory, a regional technology transfer laboratory on Industry 4.0 technologies.

The KEYWORDS of the main scientific contributions in the previous research fields are here summarised:

- State Observers
- Data fusion and multisensor fusion
- Mobile Robotics
- Artificial Vision
- Robotics
- Self localization of autonomous vehicles
- Modelling and behaviour prediction of Phase Change Materials (PCM)
- Nonlinear oscillators on Riemann manifolds
- Nonlinear and linear dynamics and control
- Optimal control systems
- Modelling and control of autonomous and mechatronic systems
- Vehicle dynamics: modelling and control
- Modelling and control of electric vehicles
- Modelling of two-wheeled vehicles in both standard and critical conditions
- Slip and traction control of two-wheeled vehicles
- Embedded control systems for automatic or autonomous systems
- Cyber Physical Systems
- Industry 4.0 and Intelligent Factory of the Future
- KPI analysis and modelling for smart manufacturing
- Fault diagnosis and Predictive maintenance of motor operated devices
- Industrial Automation
- Automation in construction
- Smart materials and industrial applications
- Multi agent Systems and Holonic Systems

The research activity is also partially supported by international collaborations with

Dr. Raúl Suárez
Director de Recerca
Institut d'Organització i Control de Sistemes Industrials (IOC)
Universitat Politècnica de Catalunya (UPC)
Diagonal 647, planta 11
08028 Barcelona, Spain

Prof. Stjepan Bogdan
University of Zagreb
Faculty of Electrical Engineering and Computing
Department of Control and Computer Engineering
LARICS - Laboratory for Robotics and Intelligent Control Systems
Zagreb, Croatia

Prof. Dorota Stadnicka
Rzeszow University of Technology
Faculty of Mechanical Engineering and Aeronautics
Al. Powstancow Warszawy 12
35-959 Rzeszow, Poland

Prof. Gianluca Rizzello
Saarland University
Department of Systems Engineering
Department of Materials Science & Engineering
Intelligent Material Systems Lab
Zentrum für Mechatronik u. Automatisierungstechnik (ZeMA)
Eschberger Weg 46, Gewerbepark Gebäude 9

D-66121 Saarbrücken, Germany

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Josep Pla2, Edificio B2, Planta10, 08019, Barcelona
Barcelona, Spain

Dr. Júlia Borràs Sol
Associate researcher
Laboratorio de Percepción y Manipulación
IRI - Institut de Robòtica i Informàtica Industrial (CSIC-UPC, Joint Research Center of the Spanish National Research Council (CSIC) and the Technical University of Catalonia (UPC)).
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Faculty of Mechanical Engineering and Design
Department of Production Engineering
Studentų st. 56
LT-51424 Kaunas, Lithuania

AWARDS AND ACKNOWLEDGMENTS FOR SCIENTIFIC ACTIVITY

- 2023 Winner of the program "VALUE - VALUing the outcomes of the UnivErsity research"**
Winner of the first prize and funding of €47,200.00 for the PoC (Proof of Concept) project named "Edge4PdM - Edge computing for Predictive Maintenance and diagnosis of machine driven by an electric motor".
It took first place among other project proposals for the research aimed at technology transfer under the program "VALUE - VALUing the outcomes of the UnivErsity research", a program funded by MIMIT (Ministry of Enterprise and Made in Italy) through the agency Invitalia S.p.A., with funds from the European Community - Next Generation EU (PNRR funding - Mission 1 "Digitalization, innovation, competitiveness, culture and tourism".
Period: 01 Nov. 2023 – 28 Feb. 2025
- 2022 Award as "Editor's Choice Article" of the journal Sensors**
For the paper "Human-Robot Perception in Industrial Environments: A Survey", by Andrea Bonci, Pangcheng David Cen Cheng, Marina Indri, Giacomo Nabissi and Fiorella Sibona.
Sensors MDPI, Vol. 21, Issue 5, pp. 1-29, Feb. 24, 2021
Period: Dec. 2022
- 2022 Best Presentation Award**
For the paper "The overall labour effectiveness to improve competitiveness and productivity in human-centered manufacturing", by Andrea Bonci, Dorota Stadnicka and Sauro Longhi,
Manufacturing International Scientific Technical Conference, 16-19 May.2022, Poznan, Poland.
Period: May 2022
- 2021 IES Young Professionals & Students Paper Assistance Award**
for the paper "Motor Torque Analysis for diagnosis in PMSMs under non-stationary conditions", by A. Bonci, G. Nabissi, R. Kermenov, S. Longhi, 26th IEEE International Conference on Emerging Technologies & Factory Automation (ETFA 2021), 7-10 Sept.2021, Vasteras, Sweden
Period: September 2021
- 2001 Winner of the academic award "Young Researchers Project"**
Affiliation: University of Ancona – Ancona (Italy), (funded by MIUR - Ministry of Education, University and Research - 2000)

Period: 10/05/2002 - 10/05/2003

RESEARCH PROJECTS

From Jan. 2023 to Dec. 2025

HORIZON EUROPE DIGITAL - EDIH4Marche “European Digital Innovation Hub for Marche”.**Call DIGITAL-2021-EDIH-01; Topic DIGITAL-2021-EDIH-INITIAL-01;****Grant Agreement number: 101084027**

- Coordinator DIGITAL INNOVATION HUB MARCHE – Confindustria Marche Nord, Italy

- Period: 1 January 2023 - 31 December 2025, duration 36 months.

From January 2019 to June 2022

H2020 ENCORE “Energy aware BIM Cloud Platform in a COst-effective Building Renovation Context”.**Call H2020-NMBP-ST-IND-2018-2020; Topic H2020-NMBP-EEB-2018, Grant Agreement number: 820434**

From Nov. 2023 to Aug. 2026

INVITALIA R&D Project, “CIRCULAR FASHION, - IN.CO. Industria Confezioni S.p.A.**INVITALIA S.p.A. (national agency for investment attraction and enterprise development) – Industrial development programmes for strategic production chains – Decree of the Italian Ministry of Economic Development (MISE), DM 09 December 2024 – Decree of admission to funding DM 11 may 2023 Title II art. 4 and the art. 6 with art.4 of DD 18 July 2023.**

- Project start: 20 November 2023, duration 33 months.

- Role of **Research Consultant** for the research and development of robotic disassembly solutions for circular fashion and digital solutions for eco-design of clothing and fashion products.

From Oct. 2023 to Jul. 2026

MIMIT Project, “Perseo - enhancement of the GUCCI Logistic S.p.A. and PIGINI S.r.l. production capacity of footwear articles, through the technological development of new production methods and machinery”.**MIMIT Ministry of Industry and Made in Italy – Industrial development programmes for strategic production chains – Decree of admission to funding DM 11 may 2023 Title II art. 4 and the art. 6 with art.4 of DD 18 July 2023.**

- Principal Investigator: PIGINI S.r.l. – Bruno Gambassi.

- Role of **Research Consultant** for the research and development of design and production processes related to fashion footwear.

From Aug. 2024 to Jan. 2026

PR MARCHE FESR 2021-2027, Project Title: “TANDEM: Testing tool AND Energy Maker”.**Marche Region from the Regional Program of the European Regional Development Fund PR MARCHE FESR 2021-2027 - AXIS 1 - OS 1.1 - ACTION 1.1.1. (EU ERDF – European Regional Development Fund)**

- Coordinator: Soft Engine S.r.l.

- Project start: 08 August 2024, duration 18 months.

- Project aims: develop automotive electric motor test stations for electric, hybrid and hydrogen cars and also quadricycles, motorcycles, e-bikes.

Role and Activities – Consultant specialist of the project.

- From Aug. 2024 to Jan. 2026 **PR MARCHE FESR 2021-2027, Project Title: "PENTA: Energy efficient production, ergonomic and tracked assisted for furniture sector".**
Marche Region from the Regional Program of the European Regional Development Fund PR MARCHE FESR 2021-2027 - AXIS 1 - OS 1.1 - ACTION 1.1.1. (EU ERDF – European Regional Development Fund)
- Coordinator: Giessegi Industria Mobili S.p.a
- Project start: 08 August 2024, duration 18 months.
- Project aims: improve energy efficiency in production, assisted manual load handling, optimization of goods loading and zero-defect quality control.
Role and Activities – Consultant specialist of the project
- From Aug. 2024 to Jan. 2026 **PR MARCHE FESR 2021-2027, Project Title: "VERTIcALL: VERTIcal Autonomous Landing".**
Marche Region from the Regional Program of the European Regional Development Fund PR MARCHE FESR 2021-2027 - AXIS 1 - OS 1.1 - ACTION 1.1.1. (EU ERDF – European Regional Development Fund)
- Coordinator: Selektro Italia S.r.l.
- Project start: 08 August 2024, duration 18 months.
- Project aims: surface equipped for electrically powered vertical take-off and landing aircraft (eVTOL, EASA SC-VTOL-01) as cargo drones and two-seater air-taxis.
Role and Activities – Consultant specialist of the project
- From April 2019 to April 2023 **National Competence Center: "ARTES 4.0 - Advanced Robotics and enabling digital TEchnologies & Systems 4.0".**
MISE Ministry of Economic Development – Director's Decree of 29/01/2018 - Concessions granted pursuant to art. 6, c. 1, lett. a) D.D. 29.01.2018 - Negotiation act between MISE and Competence Center ARTES 4.0 prot. 09/2019 of 29/04/2019
- Project start: 29 April 2019, duration 36 months.
- Role of **Vice-Coordinator** of the Regional Macro node (Marche region) for the beneficiary UNIVPM (Università Politecnica delle Marche).
- From Sept. 2019 to Nov. 2022 **MIUR PRIN Project, "A Distributed Digital Collaboration Framework for Small and Medium-Sized Engineering and Construction Enterprises".**
MIUR – PRIN Research Projects of National Interest 2017– Decree of admission to funding 1162/2019 of 17/06/2019
- Project start: 15 September 2019, duration 36 months.
- Role of **participant in the Research Program** for the Automatic Control sector of the Department of Information Engineering at UNIVPM (Università Politecnica delle Marche).
- From Nov. 2018 to April 2022 **POR MARCHE FESR 2014/2020, Project Title: "HD3Flab: Laboratory of the Factory of the Future, digital, flexible and human-oriented".**
Marche Region from the Regional Operational Program of the European Regional Development Fund POR MARCHE FESR 2014/2020 - AXIS 1 - OS 2 - ACTION 2.1. (EU ERDF – European Regional Development Fund)
- Project start: 15 November 2018, duration 36 months + 4 years of laboratory activity.
- Role of: **Official Team Manager of the project** and responsible delegate for the UNIVPM beneficiary (Università Politecnica delle Marche) on the three sub-projects: Mercury, Urrà, i-Labs laboratory.
- From Nov. 2018 to Oct. 2021 **MISE, Agreements for Innovation, Smart Factory**
Project title: "Electrospindle 4.0 Zero Defect Manufacturing".
MISE – Agreements for Innovation, National Smart Specialization Strategy: "Smart Factory", D.M. 5 March 2018, Capo II Prog. n. F/160038/01-04/X41 - HSD S.p.A
- Project start: delayed to November 2020, duration 30 months.
- Role of **Head of one of the research units** for the UNIVPM beneficiary (Università Politecnica delle Marche).
- From Feb. 2021 to Jan. 2023 **MISE, Agreements for Innovation, Smart Factory**

Project title: "Intelligence 5.0: from cyber-physical systems for the creation of 'self-aware' machine tools to innovative models of advanced industrial services" (Project No 342).

MISE – Agreements for Innovation, National Smart Specialization Strategy: "Smart Factory", D.M. 5 March 2018

- Project start: Feb. 2021, duration 24 months.

- Role of **Participant of one of the research units** for the UNIVPM beneficiary (Università Politecnica delle Marche).

From April 2018 to April 2021

MIUR PON "Research and Innovation" 2014-2020,

Project Title: "REACT - Innovative methods and tools for REACTIVE Product Design and Manufacturing".

MIUR – PON National Operational Plan "Research and Innovation" 2014-2020, Specialization Area: Smart Factory, Project n. ARS01_01031 – Decree of admission to funding: Director Decree D.D. 13 July 2018, n. 1825 - Code ARS01_01031

- Project start: 01 April 2018, duration 30 months.

- Role of **Head of one of the research units** for the UNIVPM beneficiary (Università Politecnica delle Marche).

From Jan. 2018 to Dec. 2021

MISE Call for Major Projects R&S (FRI),

Project Title: "SMART SHOES MANUFACTURING: Innovative Methodologies and innovative technological tools for the simplification of production processes in Santoni SpA".

MISE Call for Major Projects R&S from the resources of the Revolving Fund for business support and research investment (FRI) – DD.MM 15 October 2014 and 24 July 2015, Announcement: "Sustainable Industry" - Application for facilities of 18/01/2017 Pos. 58.

- Project start: 18 January 2018, duration 30 months.

- Role of **Research Consultant** for the research and development of design and production processes related to customized fashion footwear.

January 2017 - December 2018

University Strategic Research Project, "Re-Thinking Digital Buildings according to the cyber - physical paradigm: modelling and development".

University Strategic Research, 2016, Università Politecnica delle Marche

- Project start: 10 January 2017, duration 24 months.

Role and Activities – Head of one of the research units, Proposing member of the proposal.

January 2017 - December 2018

Department Research Project, "Real-time Multi-Agent Systems for cyber-physical systems".

University Scientific Research RSA - Type B, 2016, Università Politecnica delle Marche

- Project start: 10 January 2017, duration 24 months.

Role and Activities – Head of one of the research units, Proposing member of the proposal, participation in the drafting of the proposal.

January 2015 - December 2017

Department Research Project, "Nonlinear Oscillators on curve manifolds: sincronization and control".

University Scientific Research RSA - Type B, 2014, Università Politecnica delle Marche

- Project start: 10 January 2015, duration 24 months.

Role and Activities – Head of one of the research units, Proposing member of the proposal.

December 2014 – October 2020	Cluster Smart Factory Project 1, Project title: “Sustainable Manufacturing” (no. CTN01_00163_148175). MIUR Director’s Decree n. 257 del 14 December 2012, Specialization Area: Smart Factory. Cluster Smart Factory (https://www.fabbricaintelligente.it/progetti/) - Project start: 14 December 2014, duration 36 months + extensions. - Role: Delegate of the Prof. Sauro Longhi, responsible for the beneficiary's activities UNIVPM (Università Politecnica delle Marche).
March 2010 - September 2012	MIUR PRIN Project, “Application of methodologies errors-in-variables in identification, diagnosis and signal processing of dynamic processes. Geometric approach to the reconstruction of the unknown input starting from an initial non-zero and unknown state, with extension to systems defined on rings”. MIUR – PRIN Research Projects of National Interest 2008 – Protocol number 20085FFJ2Z_004 - Project start: 22 March 2010, duration 24 months. - Role: Participant in the Research Program for the Automatic Control sector of the Department of Information Engineering of UNIVPM (Università Politecnica delle Marche).
February 2007 – March 2009	MIUR PRIN Project, “Variable error techniques in the solution of identification, diagnosis and signal processing problems. Geometric methods for the optimization of regulation transients in systems subject to wide parametric variations”. MIUR – PRIN Research Projects of National Interest 2006 – Protocol number 2006094843_003 - Project start: 09 February 2007, duration 24 months. - Role: Participant in the Research Program for the Automatic Control sector of the Department of Information Engineering of UNIVPM (Università Politecnica delle Marche).
From 2003 to 2004	MIUR PRIN Project, “MATRICS: Applications, Methodologies and Technologies for Robot Interaction, Cooperation and Supervision”. MIUR – PRIN Research Projects of National Interest 2003-2004 - Project start: January 2003, duration 24 months. - Role: Member of the working group for UNIAN beneficiary (Università degli studi Ancona).
From 2001 to 2002	MIUR PRIN Project, “MISTRAL: Methodologies and Integration of Subsystems and Technologies for Anthropic Robotics and Locomotion”.
From 2000 to 2002	European Project “MODASPECTRA: MOrtor Disability Assessment for SPECialists’ TRaining – Project MM 1041 – DG XIII”. European Project 2000-2002 – “Platform for e-learning courses on clinical applications of Movement Analysis in a context of Life Long Learning” - Project start: January 2000, duration 36 months. - Role: Member of the working group for beneficiary Università degli studi Ancona (UNIAN).
CONSULTING AND COLLABORATION ACTIVITIES IN R&D AND TECHNOLOGY TRANSFER WITH INDUSTRY	
From 06 may 2024 to 05may 2029	Consultancy contract for R&D activities on the activity “Artificial Intelligence and Augmented Intelligence” Contractor: Intelligenza Aumentata S.r.l.
From 16 dec 2016 to 30 dec 2018	Consultancy contract for R&D activities on the activity “Modelling

and Control of Vibration and Weighing systems for multi-head automatic packaging machines”

Contractor: **MIELE S.p.A.**

From 04 Feb 2020 to 30 Apr 2021

Consultancy contract for R&D activities on the Project “SIMPLE – Smart Manufacturing Machine with Predictive Lifetime Electronic Maintenance”

MISE – Agreements for Innovation, National Call for projects: D.M. 24 May 2017

Contractor: **Schnell S.p.A.**

Since 2023

Consultant in R&D and Technology Transfer

Giessegi Industria Mobili S.p.a.

Since 2021

Collaboration in R&D and Technology Transfer

- **OMRON ELECTRONICS IBERIA S.A.U.**

Since 2021

Consultant in R&D and Technology Transfer

Schnell S.p.A.

Since 2021

Consultant in R&D and Technology Transfer

Soft-Engine S.r.l.

Since 2019

Collaboration with industry

IMA S.p.A. – I.M.A. Industria Macchine Automatiche

Since 2019

Collaboration with industry

Ariston Thermo Group

Since 2018

Consultant in a project funded by MISE for large R&D projects (FRI)

Santoni S.p.A.

Since 2017

Industry 4.0 company certification consultant

Bureau Veritas S. A.

Since 2017

Consultant for Industry 4.0 company certification

Meccano S.p.A.

Since 2015

Consultant in R&D, Technology Transfer and Project Development

MIELE S.p.A.

Since 2014

Collaboration between University and Corporation

RENESAS electronics Europe Limited

Since 2014

Collaboration with industry

Eletica S.r.l.

Since 2014

R&D Collaboration with industry

CAMPETELLA Robotic Center S.r.l.

- From 2014 to 2016 **R&D Collaboration with industry**
BENELLI Q.J. S.r.l.
- From 2014 to 2016 **R&D Collaboration with industry**
PICCHIO S.p.a.
- From 2014 to 2016 **R&D Collaboration with industry**
ETA automotive S.r.l.
- From 2014 to 2015 **Collaboration with industry**
MC2 S.r.l.
- From 2013 to 2016 **R&D Collaboration with industry**
Visionar S.r.l.
- From 2010 to 2016 **Consultant in R&D and Collaboration with industry**
SPES S.c.p.a.

PATENT ACTIVITY

- 2021 **Author of the international patent "Method and system for diagnosing faults in a machine driven by an electric motor".**
- Patent priority and date: Nr. 102020000007249, 02.04.2020
- International Application Number: PCT/EP2021/058818
- International Publication Number and date: WO 2021/204731 A1, 14.10.2021
- Ownership: Università Politecnica delle Marche.
- Authors: Andrea Bonci and Giacomo Nabissi.
- October 2023 **Author of the national patent "Optimal control system for vibratory feeder".**
- Patent priority and date: 102023000022575, 27/10/2023
- Ownership: Università Politecnica delle Marche and MIELE S.p.A.
- Authors: Andrea Bonci.
- October 2023 **Author of the national patent "Fast dynamic weighing system".**
- Patent priority and date: 102023000022590, 27/10/2023
- Ownership: Università Politecnica delle Marche and MIELE S.p.A.
- Authors: Andrea Bonci, Giuseppe Antonio Scala, Alessandro Di Biase..
- May2024 **Author of the national patent " Gripping system for high-precision machining"**
- Under submission for Patent priority.
- Ownership: Università Politecnica delle Marche.
- Authors: Renat Kermenov and Andrea Bonci.

TEACHING ACTIVITY

- Since 2019 **Professor of academic teaching**
"Dynamics and Control of Intelligent Robot and Vehicles".
Master's Degree Course in Computer and Automation Engineering
- Academy: Università Politecnica delle Marche.
- Duration: 72 hours (9 CFU).
- Period: Since AA 2019/2020.
Role and Activities – University teaching position, sector ING-INF/04 Automatica.
- Since 2007 **Professor of academic teaching**

“Automation Laboratory”.

Bachelor's degree Course in Computer and Automation Engineering

- Academy: Università Politecnica delle Marche.
- Duration: 72 hours (9 CFU).
- Period: Since AA 2007/2008.

Role and Activities – University teaching position, sector ING-INF/04 Automatica.

Since 2024

Professor of academic teaching

“Technologies for digital simulation in video games and virtual reality”

Bachelor's Degree Course in Information Engineering for Videogames and Virtual Reality

- Academy: Università Politecnica delle Marche.
- Duration: 72 hours (9 CFU).
- Period: Since AA 2024/2025.

Role and Activities – University teaching position, sector ING-INF/04 Automatica.

From 2018 to 2019

Professor of academic teaching

“Methods and techniques for Simulation”.

Master's Degree in Computer and Automation Engineering

- Academy: Università Politecnica delle Marche.
- Duration: 72 hours (9 CFU).
- Period: AA 2018/2019.

Role and Activities – University teaching position, sector ING-INF/04 Automatica.

February - March 2020

Contract Professor for the post-graduate course in "Architectures, Processes and Technologies Industry 4.0".

Teaching of n.2 didactic modules: "Design and Architectures of Machines and Plants in Logic 4.0" and "Robots and Collaborative Robots".

- Provider: Coordinating Committee for the improvement course Industry 4.0 Architectures, Processes and Technologies.
- Duration: 4 + 2 = 6 hours.
- Period: February - March 2019.

Role and Activities – Contract Professor of Postgraduate Specialization Course.

From 2011 to 2012

Professor of academic teaching

“Technologies for Automation and Robotics”.

Master's Degree in Computer and Automation Engineering

- Academy: Università Politecnica delle Marche – Branch office of Fermo.
- Duration: 72 hours (9 CFU).
- Period: AA 2011/2012, from November 2011 to November 2012..

Role and Activities – University teaching position, sector ING-INF/04 Automatica.

TEACHING ASSIGNMENTS IN FOREIGN ACADEMIES

May 2023

Academic teaching period at Politechnika Rzeszowska

“ Methods, techniques and tools for modeling, control and/or simulation of advanced dynamic systems such as robots and vehicles ”.

Master's Degree Course in Mechanical Engineering

- Academy: Politechnika Rzeszowska.

TEACHING-RELATED EXPERIENCES

Participation in coordination
committees and monitoring of
teaching activities

- From 2019 to 2021 **Head of the Outgoing Students Steering Committee for the Presidency of the Faculty of Engineering**
Responsible for the Outgoing Students Steering Committee for the Presidency of the Faculty of Engineering of the Università Politecnica delle Marche, Italy.
- Since 2018 **Member of the Ordering Committee of the post-graduate course in "Architectures, Processes and Technologies Industry 4.0".**
He is a permanent member for the Polytechnic University of Marche of the Ordering Committee of the post-graduate course "Architectures, Processes and Technologies Industry 4.0", aimed at training qualified technicians on new enabling technologies Industry 4.0.
- Since 2017 **Member of the Academic Board of the PhD in "Information Engineering"**
He is member of the Academic Board of the PhD in Information Engineering for the Department of Information Engineering at the Polytechnic University of Marche, Italy.
- Since 2022 **Member of the Academic Board of the PhD DRIM - Doctoral on Robotics and Intelligent Machines."**
He is member of the Academic Board of the PhD program DRIM - Doctoral on Robotics and Intelligent Machines – representative delegate for Università Politecnica delle Marche (Italy).
- Supervisor and Scientific Tutor of
Fixed-term assistant professors
- 2025 - 2026 **Mariorosario Prist**
"Digitisation and interconnection of assembly and flow handling processes within the Cyber Physical Systems paradigm for greater environmental sustainability of production processes, in areas including industrial, collaborative and service robotic systems".
Contract extension of fixed-term assistant professor (RTD-A).
Role and Activities – Co-supervisor and Scientific Tutor.
- 2022 - 2024 **Mariorosario Prist**
"Digitisation and interconnection of assembly and flow handling processes within the Cyber Physical Systems paradigm for greater environmental sustainability of production processes, in areas including industrial, collaborative and service robotic systems".
Fixed-term assistant professor (RTD-A) funded on MIUR funded FSE REACT-EU resources under Ministerial Decree D.M. 1062 of 10.08.2021, implementing Action IV.6 - Research contracts on green topics, on the new Axis IV of the PON Research and Innovation "Education and Research for Recovery - REACT-EU".
Role and Activities – Supervisor and Scientific Tutor.
- 2019 - 2021 **Massimiliano Pirani**
"Holonc approach for Automatic Planning of the workflow in building renovation".
Fixed-term assistant professor (RTD-A) funded on EU H2020 project entitled "ENCORE – ENergy

aware BIM Cloud Platform in a COst-effective Building RENovation Context” - Grant Agreement No. 820434 - CUP I36C19000090006 Università Politecnica delle Marche, Ancona, Italy.

Role and Activities – Supervisor and Scientific Tutor.

Supervisor / Co- supervisor of PhD students

- | | |
|-------------|--|
| 2024 - 2027 | <p>Andrea Serafini
 “Integrating Artificial Intelligence into Robotics and Edge computing for versatile and efficient Manufacturing 5.0”.
 PhD scholarship for regional system innovation – Innovative PhD with industrial characterization. Administrative and hosting organization Università Politecnica delle Marche (Italy).
 Role and Activities – Supervisor and academic tutor.</p> |
| 2023 - 2026 | <p>Alessandro Di Biase
 “ Model-based condition monitoring, fault diagnosis and control of autonomous systems ”.
 PhD scholarship on National Doctoral program DAUSY – Doctoral on Autonomous Systems, 39 cycle, D.M.118, administrative office Politecnico di Bari (Italy), hosting organization Università Politecnica delle Marche (Italy).
 Role and Activities – Co-supervisor and academic tutor.</p> |
| 2020 - 2024 | <p>Renat Kermenov
 “Efficiency improvement of highly manual production processes through automated and digital solutions”.
 MIUR funded PhD scholarship, at company HP - Composite S.p.A. (Via del Lampo, sn Zona Ind.le Campolungo, 63100 Ascoli Piceno - AP, Italy).
 Role and Activities – Supervisor and academic Tutor.</p> |
| 2019 - 2023 | <p>Riccardo Rosati
 “Embedded automation and edge computing for Industry 4.0”.
 Innovative PhD scholarship with industrial characterization at company ELETICA s.r.l. (Castelplanio - AN, Italy).
 Role and Activities – Supervisor and academic Tutor.</p> |
| 2019 - 2023 | <p>Giacomo Nabissi
 “Predictive maintenance to support automation and control of systems and processes in industry 4.0”.
 PhD without scholarship at Università Politecnica delle Marche (Ancona, AN, Italy).
 Role and Activities – Supervisor and academic Tutor.</p> |
| 2018 - 2022 | <p>Giuseppe Antonio Scala
 “Optimization and control problems of nonlinear systems with linear - like structure, applications and computational aspects”.
 PhD scholarship funded by Università Politecnica delle Marche (Ancona, AN, Italy).</p> |

Role and Activities – Supervisor and academic Tutor.

2017 - 2020 **Emanuele Lorenzoni**
“Automation and control of packaging machines in the smart factory”.
 PhD Fellowship co-funded by the company Miele SpA, (Foiiano della Chiana, AR, Italy) and Università Politecnica delle Marche (Ancona, AN, Italy).

Role and Activities – Supervisor and academic Tutor.

2017 - 2020 **Carlo Bianconi**
“Factory Automation and production in the perspective of the Industry 4.0 “.
 EUREKA PhD scholarship co-funded by MAR-TECH Srl company (Monte Roberto, AN, Italy), Marche Region (Italy) and Università Politecnica delle Marche (Ancona, AN, Italy).

Role and Activities – Supervisor and academic Tutor.

2013 - 2016 **Riccardo De Amicis**
“Innovative systems for active control of electric motorcycles”.
 EUREKA PhD scholarship co-funded by Visionar Srl (Montefano, MC, Italy), Marche Region (Italy) and Università Politecnica delle Marche (Ancona, AN, Italy).

Role and Activities – Co- Supervisor and academic Tutor.

Member of selection committees
 for admission to PhD fellowship

Jul.2023-Oct.2023 **Member of the selection committee for admission to PhD fellowship of National Interest in Autonomous Systems (DAUSY) – 39th Cycle**
 Politecnico di Bari (Bari, BA, Italy).

Role and Activities – Member of the selection committee.

Member of doctoral examination
 committees

Nov.2023-Dec.2023 **Bahman Askari**
“Learning-based Approaches for Automatic Fault Detection and Diagnosis in Industrial Systems”.
PhD school in Electrical and Information Engineering (DRIEI)
 Politecnico di Bari (Bari, BA, Italy).

Role and Activities – Member of the doctoral examination committee.

Member of doctoral thesis
 evaluation committee

Feb.2024 **Davide Sestili**
“ Dany: scalability solutions for IoT smart contracts”.
PhD school in Computer Science and Mathematics
 University of Camerino (Camerino, MC, Italy).

Role and Activities – Member of the doctoral thesis evaluation committee.

Supervisor of Research Fellows (Post-Doc positions)

Jun.2024-May 2025	Ilaria Pellicani "Edge computing for predictive maintenance and diagnosis of electric motor driven machinery"
Jul.2022-Nov.2023	Maria Cristina Giannini "Firmware and sensor solutions for analysing signals and operating conditions of electrospindles".
Feb.2020-Feb.2021	Alice Cervellieri "The BIM system as an interoperability platform in the context of energy-efficient building renovations and work planning"
Nov.2019-Nov.2023	Giacomo Nabissi "Advanced automation solutions for collaborative robotics and predictive maintenance in Industry 4.0"
2018	Massimiliano Pirani "Holonc approach for Automatic Planning of the workflow in building renovation"
2017- 2018	Leonardo Messi "Re-thinking digital buildings according to the cyber-physical paradigm: modelling and development"
2017	Emanuele Lorenzoni "Study and development of solutions for the modeling and control of weighing systems and vibrating systems for automatic machines"
2017	Riccardo De Amicis "Definition and design of interoperable domotic systems for smart environments"
2017	Alessio Nardini "Parametric identification of a dynamic simulation platform for two-wheeled electric vehicles"
2015-2017	Massimiliano Pirani "Smart Factory Modeling Strategies: Study and Development of a Factory Modeling Method to Enable Energy Efficiency Assessment "

Tutor of Fixed-term contracts

March.2020-Oct.2020	Christian Morbidoni "Definition and testing of models for the integration of knowledge-based systems at the semantic level"
Apr.2019-Lug.2020	Emanuele Storti "Study and application of data analytics techniques for predictive and prescriptive maintenance"

Student Advisor of Master's degree theses

From 2010 to 2025 he has supervised more than 25 Master's degree students.

Student Advisor of Bachelor's degree theses

From 2010 to 2025 he has supervised more than 60 Bachelor's degree students

ADDITIONAL ACTIVITIES

Editorial Activities

Associate Editor and Editorial Board Member of the international journal "Control Engineering Practice" (Elsevier) -
- e-ISSN: 1873-6939, ISSN: 0967-0661
Section "Control systems"
- Role: Associate Editor and **Editorial Board Member**

<https://www.sciencedirect.com/journal/control-engineering-practice/about/editorial-board>

Associate Editor and Editorial Board Member of the international journal “Electronics” a MDPI magazine (Switzerland)

- ISSN: 2079-9292

Section “Industrial Electronics”

- Role: Section Board Member and Associate Editor

https://www.mdpi.com/journal/electronics/sectioneditors/Industrial_Electronics

Guest Editor of “Sensors” MDPI magazine (Switzerland)

- ISSN: 1424-8220

Special Issue on “Smart Sensors for Robotic Systems”

- Role: Invited Guest Editor of the Special Issue.

https://www.mdpi.com/journal/sensors/special_issues/SSRS

Membership to International
Scientific Committees

Member of the Technical Committee IEEE IES Technical Committee on Factory Automation (TCFA)

IEEE IES Technical Committee on Factory Automation

- Invited as a member of the technical committee whose objective is the development and application of new technologies in Factory Automation.

- Member of the FA9 subcommittee: Subcommittee on Intelligent and Cooperative Robotics.

Member of the Technical Committee IEEE IES Technical Committee on Industrial Agents (TCIA)

IEEE IES Technical Committee on Industrial Agents

- Invited as a member to the work of the technical committee whose objective is the development and application of industrial agent technology for the manufacturing, services and infrastructure sectors.

Member of the Technical Committee IEEE IES Technical Committee on Technology Ethics and Society (TC-TES)

IEEE IES Technical Committee on Technology Ethics and Society

- Invited as a member of the technical committee whose objective is to identify critical issues and challenges for future investigation on Machine Ethics, Artificial Intelligence, Technology Ethical Impact, Societal Implications.

Member of the Working Group WG P2660.1 in Standard Committee of IEEE Industrial Electronics Society

- Topic: “Recommendation Practices on Industrial Agents: Integration of Software Agents and Low Level Automation Functions”.

Membership to
Program Committees of
international conferences

Associate Editor in 11th IEEE-IFAC International Conference on Control, Decision and Information Technology CODIT 2025, Split, Croatia, 15-18 July 2025

Activity or sector – Member of the technical committee of international conference.

Special Session Chair in 30th IEEE International Conference on Emerging Technologies and Factory Automation ETFA 2025, Porto, Portugal, 9-12 September 2025

- Member of the organising committee.

Activity or sector – Member of the organising committee of international conference.

Track Chair in 29th IEEE International Conference on Emerging Technologies and Factory Automation ETFA 2024, Padova, Italy, 10-13 September 2024
Track Chair for Technical Track 7 “Intelligent Robots and Systems” at 29th IEEE ETFA 2024, Padova, Italy

Activity or sector – Member of technical committee of international conference.

Track Chair in 28th IEEE International Conference on Emerging Technologies and Factory Automation ETFA 2023, Sinaia, Romania, 12-15 September 2023

Track Chair for Technical Track 7 “Intelligent Robots and Systems” at 28th IEEE ETFA 2023, Sinaia, Romania

Activity or sector – Member of technical committee of international conference.

Track Chair in 27th IEEE International Conference on Emerging Technologies and Factory Automation ETFA 2022, Stuttgart, Germany, 6-9 September 2022

Track Chair for Technical Track 7 “Intelligent Robots and Systems” at 27th IEEE ETFA 2022, Stuttgart, Germany

Activity or sector – Member of technical committee of international conference.

Track Chair in 26th IEEE International Conference on Emerging Technologies and Factory Automation ETFA 2021, Vasteras, Sweden, 7-10 September 2021

Track Chair for Technical Track 7 “Intelligent Robots and Systems” at 26th IEEE ETFA 2021, Vasteras, Sweden

Activity or sector – Member of technical committee of international conference.

Member of the Track Program Committee in 26th IEEE International Conference on Emerging Technologies and Factory Automation ETFA 2021, Vasteras, Sweden, 7-10 September 2021

Track Program Committee for Technical Track 10 “Artificial Intelligence for Cyber-Physical Systems in Automation” at 26th IEEE ETFA 2021, Vasteras, Sweden

Activity or sector – Member of technical committee of international conference.

Member of the Track Program Committee n.7 in 25th IEEE International Conference on Emerging Technologies and Factory Automation ETFA 2020, Vienna Austria, 08 - 11 September 2020

Track Program Committee for Technical Track 7 “Intelligent Robots and Systems” at 25th IEEE ETFA 2020, Vienna, Austria

Activity or sector – Member of technical committee of international conference.

Member of the Track Program Committee n.10 in 25th IEEE International Conference on Emerging Technologies and Factory Automation ETFA 2020, Vienna Austria, 08 -11 September 2020

Track Program Committee for Technical Track 10 “Artificial Intelligence for Cyber-Physical Systems in Automation” at 25th IEEE ETFA 2020, Vienna, Austria

Activity or sector – Member of technical committee of international conference.

Chairman or cochairman of international conference sessions

2024 - chairman of the Session Artificial Intelligence for Supporting Human and Industrial Practices, at 6th International Conference on Industry 4.0 and Smart Manufacturing (ISM 2024), Prague, Czech Republic, 19-22 November 2024

<https://www.msc-les.org/ism2024/>

2024 - chairman of the Sessions: Track 7 - Human-Robot collaboration and learning; Robot

planning; and Track 4 - AI Advancements in Manufacturing Management, at 29th IEEE International Conference on Emerging Technologies and Factory Automation ETFA 2024, Padova, Italy, 10-13 September 2024

<https://2023.ieee-etfa.org/>

2023 - chairman of the Session Track 7: Intelligent Robots & systems, at 28th IEEE International Conference on Emerging Technologies and Factory Automation ETFA 2023, Sinaia, Romania, 12-15 September 2023

<https://2023.ieee-etfa.org/>

2022 - chairman of the Session Track 7: Intelligent Robots & systems, at 27th IEEE International Conference on Emerging Technologies and Factory Automation ETFA 2022, Stuttgart, Germany, 6-9 September 2022

<https://2022.ieee-etfa.org/>

2020 - chairman of the Session Track 7: Robots in Industrial Applications, at 25th IEEE International Conference on Emerging Technologies and Factory Automation ETFA 2020, Vienna, Austria, 08-11 September 2020

<https://www.ieee-etfa.org/2020/program/full/>

2019 – chairman of the Session: Cyber Physical Systems and Internet of Things in Industry IS, at 45th Annual Conference of the IEEE-IES, IECON 2019, Lisbon, Portugal, Oct. 14-17, 2019.

http://submit.ieee-ies.org/submit/iecon19/schedule_list.html

2019 – chairman of the Session: Cyber Physical Systems and IoT 4, at 45th Annual Conference of the IEEE-IES, IECON 2019, Lisbon, Portugal, Oct. 14-17, 2019.

http://submit.ieee-ies.org/submit/iecon19/schedule_list.html

2018 - chairman of the Session Track 7.1: Robotic navigation, at 24th IEEE International Conference on Emerging Technologies and Factory Automation ETFA 2018, Torino, Italy, September 4-7, 2018.

<http://ieee-etfa2018.com/files/ETFA2018booklet.pdf>

2018 - chairman of the Session Track 7.3: Specific sensors and applications, at 24th IEEE International Conference on Emerging Technologies and Factory Automation ETFA 2018, Torino, Italy, September 4-7, 2018.

<http://ieee-etfa2018.com/files/ETFA2018booklet.pdf>

2015 - co-chairman a 12th International Conference on Intelligent Solutions on Embedded Systems, (WISES 2015), Ancona, Italy, October 29-30

2014 - co-chairman a 10th IEEE/ASME International Conference on Mechatronic and Embedded Systems and Applications (IEEE/ASME MESA 2014), Senigallia, Italy, September 10-12

2010 - chairman a "4th IFAC Symposium on System Structure and Control SSC 2010" Ancona, Italy, September 15-17, 2010.

2000 - co-chairman a "2nd IFAC Workshop on Linear Time Delay Systems" Ancona, Italy, September 11-13, 2000.

Speaker to International Conferences

[99] A. Bonci, M. Prist, G. Pompei, L. Longarini, A. D. Biase and C. Verdini, "Deep Learning and Text-Embedding to Integrate Energy Consumption into Industrial Machine Production Planning," 2024 IEEE 29th International Conference on Emerging Technologies and Factory Automation (ETFA2024), Padova, Italy, 10-13 Sept. 2024.

[95] A. Bonci, A. Di Biase, M. C. Giannini, S. Longhi "Yaw rate-based PID control for lateral dynamics of autonomous vehicles, design and implementation" 28th IEEE International Conference on Emerging Technologies and Factory Automation (ETFA2023), Sinaia, Romania, 12-15 Sept. 2023.

[89] A. Bonci, A. Di Biase, M.C. Giannini, M. Indri, A. Monteriu, M. Prist. "An OSGi-based production process monitoring system for SMEs", IEEE IECON 2022 Proceedings of the Industrial Electronics Conference, Brussels, Belgium, October 17-20, 2022.

[88] A. Bonci, A. Di Biase, A. F. Dragoni, S. Longhi, P. Semani, A. Zega "Machine learning for monitoring and predictive maintenance of cutting tool wear for clean-cut machining machines" 27th IEEE International Conference on Emerging Technologies and Factory Automation (ETFA2022), Stuttgart, Germany, 6-9 September 2022.

- [86] A. Bonci, D. Stadnicka, S. Longhi "The Overall Labour Effectiveness to Improve Competitiveness and Productivity in Human-Centered Manufacturing" Lecture Notes in Mechanical Engineering, 2022, pp. 144-155.
- [68] A. Bonci, S. Longhi, G. Nabissi, F. Verdini "Predictive Maintenance System using motor current signal analysis for Industrial Robot" 24th IEEE International Conference on Emerging Technologies and Factory Automation (ETFA19), Zaragoza, Spain, Sept 10-13, 2019
- [67] A. Bonci, S. Longhi, E. Lorenzoni, G. A. Scala, "Modelling of all-wheel drive motorcycle for dynamics analysis and control", Bicycle & Motorcycle Dynamics 2019 (BMD 2019), Symposium on the Dynamics and Control of Single Track Vehicles, Padova, Italy, 9–11 September 2019
- [53] A. Bonci, R. De Amicis, S. Longhi, E. Lorenzoni "On the Traction Control of Single-Track Vehicles in Different Trim Conditions", 14th IEEE/ASME International Conference on Mechatronic and Embedded Systems and Applications (MESA18), Oulu, Finland, July. 2-4, 2018, pp. 1-6.
- [52] A. Bonci, R. De Amicis, S. Longhi, E. Lorenzoni "A Smooth Traction Control Design for Two-Wheeled electric vehicles", 14th IEEE/ASME International Conference on Mechatronic and Embedded Systems and Applications (MESA18), Oulu, Finland, July. 2-4, 2018, pp. 1-6.
- [51] A. Bonci, S. Longhi, M. Pirani, E. Lorenzoni, G. Rizzello, D. Naso, S. Seelecke "Simulation Analysis and Performance Evaluation of a Vibratory Feeder Actuated by Dielectric Elastomers", 14th IEEE/ASME International Conference on Mechatronic and Embedded Systems and Applications (MESA18), Oulu, Finland, July. 2-4, 2018, pp. 1-6.
- [50] A. Bonci, M. Pirani, C. Bianconi, S. Longhi "RMAS: Relational Multiagent System for CPS Prototyping and Programming", 14th IEEE/ASME International Conference on Mechatronic and Embedded Systems and Applications (MESA18), Oulu, Finland, July. 2-4, 2018, pp. 1-6.
- [42] A. Bonci, M. Pirani, and S. Longhi. "Robotics 4.0: Performance Improvement Made Easy". in Proceedings of the 22nd IEEE International Conference on Emerging Technologies And Factory Automation, ETFA 2017, Limassol, Cyprus, Sept. 12-15, 2017, pp. 1-8
- [39] A. Bonci, R. De Amicis, S. Longhi, E. Lorenzoni and G. A. Scala, "A motorcycle's analytical model describing the highside fall in panic situations", in Proceedings of the 20th World Congress of the International Federation of Automatic Control IFAC 2017 World Congress (available on IFAC-PapersOnLine Volume 50, Issue 1, 2017), Toulouse, France, July 9-14, 2017, pp. 15616–15621
- [35] A. Bonci, R. De Amicis, S. Longhi, E. Lorenzoni, "Comparison of dynamic models for a motorcycle during lowside fall", 17th International Conference on Signal processing Robotics and Automation, (ISPRA '17), Cambridge, UK, February 24-26, 2017, pp. 1-8
- [32] A. Bonci, "New dynamic model for a Ballbot system", 12th IEEE/ASME International Conference on Mechatronic and Embedded Systems and Applications (MESA), Auckland, New Zeland, Aug. 29-31, 2016, pp. 1-6.
- [31] A. Bonci, R. De Amicis, S. Longhi, E. Lorenzoni, G. A. Scala, "A motorcycle enhanced model for active safety devices in intelligent transport systems", Proceedings of the 12th IEEE/ASME International Conference on Mechatronic and Embedded Systems and Applications (MESA), Auckland, New Zeland, Aug. 29-31, 2016, pp. 1-6.
- [–] L. Ciabattini, A. Fasano, F. Ferracuti, A. Freddi, S. Longhi and A. Monteriù, "A Thruster Failure Tolerant Control Scheme for Underwater Vehicles", Proceedings of the 12th IEEE/ASME International Conference on Mechatronic and Embedded Systems and Applications (MESA), Auckland, New Zeland, Aug. 29-31, 2016.
- [–] G. Rizzello, M. Hodgins, S. Seelecke, D. Naso, "Self-Sensing at Low Sampling-To-Signal frequency Ratio: an Improved Algorithm for Dielectric Elastomer Actuators", Proceedings of the 12th IEEE/ASME International Conference on Mechatronic and Embedded Systems and Applications (MESA), Auckland, New Zeland, Aug. 29-31, 2016, pp. 1-6.
- [26] A. Bonci, S. Longhi, M. Pirani and G. A. Scala, "Embedded low level control of DC motors for actuating robotic legs", *Proceedings of 12th International Conference on Intelligent Solutions on Embedded Systems 2015, (WSES 2015)*, Ancona, Italy, October 29-30, 2015, pp. 133-138,
- [25] A. Bonci, M. Pirani, M. Rossi and E. M. Gabbanini, "Embedded system for a Ballbot robot", *Proceedings of 12th International Conference on Intelligent Solutions on Embedded Systems, 2015, (WSES 2015)*, Ancona, Italy, October 29-30, (pp. 157-161), (2015)
- [22] A. Bonci, R. De Amicis, "Modelling simulation and control of dynamic platform with several degree of freedom", *10th IEEE/ASME International Conference on Mechatronic and Embedded Systems and Applications 2014, (IEEE/ASME MESA 2014)*, Senigallia, Italy, September 10-12, (pp. 1-6), (2014)
- [10] A. Bonci, T. Leo, S. Longhi "Sensor Fusion in Mobile Robots: a Bayesian approach with Real Time Multi-Processor architecture" on Proc. of the 1st European Conference on Mobile Robots (ECMR'2003), Radziejowice, Poland, pages 135-140, Sep. 4-6, (2003), printed by ZTUREK Research-Scientific Inst.
- [8] A. Bonci, T. Leo, S. Longhi, "Ultrasonic and Video Data Fusion for Mobile Robot Navigation", Proceedings of the 10th Mediterranean Conference on Control and Automation, (MED02), Lisbon, Portugal, July 09-12, (2002).
- [5] A. Bonci, S. Fioretti, T. Leo, S. Longhi, "Assistive robots: a model of dependable robots in human environments", Proceedings on 1st Joint Workshop on Technical Challenge for Dependable Robots in Human Environments, (IARP/IEEE-RAS 2001), Seoul Korea pp. III-5, May 21-22, (2001).
- [4] A. Bonci, T. Leo, S. Longhi, "Data Fusion for visual and ultrasonic map building", 6th IFAC Symposium on Robot Control, SYROCO 2000, Wien Austria, September 21-23, Vol. 1, pp 241-246, (2000).
- [3] A. Bonci, T. Leo, S. Longhi, "About visual and ultrasonic data fusion for real-time map building of mobile vehicles", 8th Int. Workshop on Robotics in Alpe-Adria-Danube Region: (RAAD 99) Munchen Germany, June 17-19, (1999).
- [2] A. Bonci, S. Longhi, F. Moscioni, "Real-time map building for mobile robots based on sonar reading", 8th Int. Workshop on Robotics in Alpe-Adria-Danube Region: (RAAD 99) Munchen Germany, pp 43-48, June 17-19, (1999).
- [1] A. Bonci, M. L. Corradini, T. Leo "A MIMO discrete time observer for unicycle mobile vehicles" IFAC Int. Conf. on Motion Control, pp. 75-80 Grenoble FR 21-23 September (1998).

Speaker to national Conferences

- [–] A. Bonci, S. Longhi, E. Lorenzoni, G. A. Scala, “Modelling of all-wheel drive motorcycle for dynamics analysis and control”, Convegno Nazionale SIDRA, Automatica.it 2019, Ancona, Italy, 9–11 September 2019
- [7] A. Bonci, S. Fioretti, T. Leo, S. Longhi, “Un sistema di navigazione per carrozzine motorizzate: specifiche funzionali ed implementazione”, @utomazione 2001, 45° Convegno dell'Associazione Nazionale Italiana per l'Automazione (ANIPLA 2001), Ancona Italia, November 22-23, pp 229-234, (2001).

Selection of invited talks

Plenary Speaker at “30th International Baltic conference on MATERIALS ENGINEERING AND MODERN MANUFACTURING 2023” (MEMM2023) 19-20th October 2023, Kaunas, Lithuania.

<https://mateng.ktu.edu/>

- Plenary speech: A. Bonci. “Managing Overall Labour Effectiveness by Cyber-Physical Systems with the Advent of Industry 5.0”.

Invited Speaker “13th Conference Lean Learning Academy” 13th Conference Lean Learning Academy - Current industry challenges and available technological solutions.

26 May 2023, Rzeszow University of Technology, Poland.

- Invited Speaker: A. Bonci. “Overall Labour Effectiveness and Cyber-Physical Systems”.

- <https://leanacademy.wbnil.prz.edu.pl/en/events/lla-conference/13th-conference-lla>

Activity or sector - Invited Speaker.

Invited Speaker “6th International Summer School on Industrial Agents: Engineering of Cyber Physical Production Systems” (ISSIA2020)

PhD Summer School - 6th International Summer School on Industrial Agents: Engineering of Cyber Physical Production Systems”.

29th June-3rd July 2020, University of Warwick – Warwick, UK.

- Lecture on invitation: A. Bonci. “Trans-disciplinary approach between industrial agents and control theory for the planning and distributed control of autonomic CPPS”.

- <https://warwick.ac.uk/fac/sci/wmg/research/digital/automation/about/summer-school-2020/>

Activity or sector- Invited teacher.

Invited Speaker “Computing in Construction Summer School” (CCSS)

PhD Summer School - Computing in Construction.

14-20 July 2019, Senigallia (AN), Italy.

- Lecture on invitation: A. Bonci. “Cyber Physical Systems for construction”.

- <https://ec-3.org/school2019>

Activity or sector- Invited teacher.

Invited Speaker “9th Conference Lean Learning Academy”

9th Conference Lean Learning Academy - Cyber-physical systems – vision and reality.

31 May 2019, Rzeszow University of Technology, Poland.

- Invited Speaker: A. Bonci. “Modern technologies supporting Cyber-Physical Systems”.

- <https://leanacademy.wbnil.prz.edu.pl/en/events>

Activity or sector - Invited Speaker.

Membership of organizations

Membership IEEE (Institute of Electrical & Electronics Engineers)

- IEEE Senior Member (since 2024)
- IEEE Membership (since 2015)
- IEEE CSS Control System Society Membership (since 2015)
- IEEE RAS Robotics and Automation Society Membership (since 2015)
- IEEE ITS Intelligent Transportation Systems Society Membership (2017)
- IEEE IES Industrial Electronics Society Membership (since 2018)
- IEEE SMC Systems Man and Cybernetics Society Membership (since 2020)

Membership SIDRA (Società Italiana dei Docenti e Ricercatori in Automatica (Italian Society of Scholar and Researcher in Automatica))

- SIDRA Membership (since 2018)

Editorial Services

Scientific reviewer of international journals and conferences

He is a reviewer for several international journals and congresses such as

International Journal of Dynamics and Control, Elsevier
 Mechatronics Journal, Elsevier
 Journal of Intelligent & Robotic Systems - Springer
 Journal of Intelligent Industrial Systems - Springer
 IEEE Transactions on Mechatronics
 IEEE Transactions on Industrial Informatics
 IEEE Transactions on Control Systems Technology
 IEEE Transactions on Industrial Electronics
 IFAC Conference on Manufacturing Modelling, Management & Control
 IEEE/ASME International Conference on Mechatronic and Embedded Systems and Applications
 ICUAS International Conference on Unmanned Aircraft Systems
 Cognitive Computation Journal, Springer
 Robotica, Cambridge University Press
 Sensors MDPI
 Electronics MDPI
 IEEE Transactions on System Man and Cybernetics - Systems SMCA
 ECC - European Control Conference
 MED - Mediterranean Conference on Control and Automation
 ETFA - Conference on Emerging Technologies and Factory Automation

PUBLICATIONS

List of publications

- [106] A. Bonci, M. Prist, E. Caizer, F. Giuggioloni, L. Longarini, G. Pompei, A. Rongoni. "ESN-based distributed inference methods for production line energy forecasting". Proceedings of the 11th IFAC Conference on Manufacturing Modelling, Management and Control – IFAC MIM2025, pp 1-7, Trondheim, Norway, 30 Jun.-3 Jul. 2025.
- [105] A. Bonci, L. Longarini, S. Longhi, G. Pompei, M. Prist. "Process regulation control using Echo State Networks: an ESN-based deep neural network approach for PID control". Procedia Computer Science, Elsevier B.V., Vol. __, pp 1-8, 2025 (Part of special issue of the 6th International Conference on Industry 4.0 and Smart Manufacturing, ISM 2024, Prague, Czech Republic Nov. 19-22, 2024).
- [104] R. Kermenov, A. Di Biase, I. Pellicani, S. Longhi, and A. Bonci, "Near Time-Optimal Trajectories with ISO Standard Constraints for Human–Robot Collaboration in Fabric Co-Transportation" Robotics, Vol. 14, no. 2, 10, Jan. 2025.
- [103] R. Kermenov, S. Foix, J. Borràs, V. Castorani, S. Longhi, A. Bonci, "Automating the hand layout process: On the removal of protective films with collaborative robots", Robotics and Computer-Integrated Manufacturing, Elsevier, Vol. 93, 102899, pp 1-10, June 2025,
- [103] R. Kermenov, S. Foix, J. Borràs, V. Castorani, S. Longhi, A. Bonci, "Automating the hand layout process: On the removal of protective films with collaborative robots", Robotics and Computer-Integrated Manufacturing, Elsevier, Vol. 93, 102899, pp 1-10, June 2025,
- [102] Bonci, A.; Kermenov, R.; Longarini, L.; Longhi, S.; Pompei, G.; Prist, M.; Verdini, C. An Echo State Network-Based Light Framework for Online Anomaly Detection: An Approach to Using AI at the Edge. Machines, Vol. 12, no. 10, 743. Pp. 1-17, Oct. 2024.
- [101] Bonci, A.; Fredianelli, L.; Kermenov, R.; Longarini, L.; Longhi, S.; Pompei, G.; Prist, M.; Verdini, C. Deep ESN Neural Networks for Industrial Predictive Maintenance through Anomaly Detection from Production Energy Data. Applied Science, Vol. 14, no. 19, 8686, Sept. 2024.
- [100] A. Bonci, A. Di Biase, S. Longhi and R. Kermenov, "Human-Robot Co-Transport of Flexible Materials Using Deformation Constraints", 2024 IEEE 29th International Conference on Emerging Technologies and Factory Automation (ETFA2024), Padova, Italy, 10-13 Sept. 2024.
- [99] A. Bonci, M. Prist, G. Pompei, L. Longarini, A. D. Biase and C. Verdini, "Deep Learning and Text-Embedding to Integrate Energy Consumption into Industrial Machine Production Planning," 2024 IEEE 29th International Conference on Emerging Technologies and Factory Automation (ETFA2024), Padova, Italy, 10-13 Sept. 2024.
- [98] A. Bonci, A. Di Biase, M. C. Giannini, S. Longhi, M. Prist, "Digital twin architecture for assembly line performance monitoring", Procedia Computer Science, Elsevier B.V., Vol. 232, pp 1089-1098, 2024 (Part of special issue of the 5th International Conference on Industry 4.0 and Smart Manufacturing, ISM 2023, Lisbon, Portugal, Nov. 22-24, 2023).

- [97] A. Bonci, F. Gaudeni, M. C. Giannini, S. Longhi. "Robot Operating System 2 (ROS2)-Based Frameworks for Increasing Robot Autonomy: A Survey" *Applied Science MDPI (Switzerland)*, 23, (13): 12796, Nov. 2023
- [96] D. Stadnicka, A. Bonci, S. Longhi, M. Pirani, G. Dec. "A Concept of an SME Focused Edge Computing Self-managing Cyber-physical System" *Management and Production Engineering Review (MPER)*, Vol.14, Num.3, pp.3-15, Sept. 2023
- [95] A. Bonci, A. Di Biase, M. C. Giannini, S. Longhi "Yaw rate-based PID control for lateral dynamics of autonomous vehicles, design and implementation" 28th IEEE International Conference on Emerging Technologies and Factory Automation (ETFA2023), Sinaia, Romania, 12-15 Sept. 2023.
- [94] A. Bonci, A. Di Biase, M. C. Giannini, F. Gaudeni, S. Longhi, M. Prist "ROS 2 for enhancing perception and recognition in collaborative robots performing flexible tasks" 28th IEEE International Conference on Emerging Technologies and Factory Automation (ETFA2023), Sinaia, Romania, 12-15 Sept. 2023
- [93] A. Silenzi, V. Castorani, S. Tomassini, N. Falcionelli, P. Contardo, A. Bonci, A. F. Dragoni, P. Semani. "Quality Control of Carbon Look Components via Surface Defect Classification with Deep Neural Networks" *Sensors MDPI (Switzerland)*, 23, (23): 7607, Sept. 2023.
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- [91] G. Nabissi, S. Longhi, A. Bonci "ROS-Based Condition Monitoring Architecture Enabling Automatic Faults Detection in Industrial Collaborative Robots" *Applied Sciences MDPI (Switzerland)*, 13 (1), Jan 2023.
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- [90] A. Bonci, E. Caizer, M. C. Giannini, F. Giuggioloni, M. Prist "Ultra Wide Band communication for condition-based monitoring, a bridge between edge and cloud computing" *Procedia Computer Science, Elsevier B.V.*, Vol. 217, pp. 1670-1677, 2023 (Part of special issue of the 4th International Conference on Industry 4.0 and Smart Manufacturing, ISM 2022, Linz, Austria, Nov. 2-4, 2022).
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- [88] A. Bonci, A. Di Biase, A. F. Dragoni, S. Longhi, P. Semani, A. Zega "Machine learning for monitoring and predictive maintenance of cutting tool wear for clean-cut machining machines" 27th IEEE International Conference on Emerging Technologies and Factory Automation (ETFA2022), Stuttgart, Germany, 6-9 September 2022.
- [87] M. Pirani, A. Bonci, S. Longhi "Towards a formal model of computation for RMAS" *Procedia Computer Science, Elsevier B.V.*, Vol. 200, pp. 865-877, 2022 (Part of special issue of the 3rd International Conference on Industry 4.0 and Smart Manufacturing, ISM 2021, Linz, Austria, Nov. 17-19, 2021).
- [86] A. Bonci, D. Stadnicka, S. Longhi "The Overall Labour Effectiveness to Improve Competitiveness and Productivity in Human-Centered Manufacturing" *Lecture Notes in Mechanical Engineering*, 2022, pp. 144-155.
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- [85] A. Bonci, S. Longhi, G. Nabissi, "Fault Diagnosis in a belt-drive system under non-stationary conditions. An industrial case study" In *Proceedings of the 2021 IEEE Workshop on Electrical Machines Design, Control and Diagnosis (WEMDCD 2021)*, Modena, Italy, 8-9 April, 2021, pp. 260–265.
- [84] A. Bonci, S. Fiori, H. Higashi, T. Tanaka and F. Verdini. "An Introductory Tutorial on Brain–Computer Interfaces and Their Applications", *Electronics MDPI (Switzerland)*, Vol. 10, Issue 5, pp. 1-43, Feb. 27, 2021.
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- [75] A. Bonci A. Cervellieri, S. Longhi, G. Nabissi, G. A. Scala "The Double Propeller Ducted-Fan, an UAV for safe Infrastructure inspection and human-interaction" 25th IEEE International Conference on Emerging Technologies and Factory Automation (ETFA2020), Vienna, Austria, Sept 08-11, 2020, pp. 727-733
- [74] C. Bianconi, A. Bonci, A. Monteriu, M. Pirani, M. Prist and L. Taccari "System Thinking Approach for Digital Twin Analysis" *IEEE International Conference on Engineering, Technology and Innovation (ICE/ITMC)*, Cardiff, United Kingdom, June 15-17, 2020, pp. 1-7.

- [73] A. Bonci, S. Longhi, G. Nabissi and G. A. Scala. "Execution Time of Optimal Controls in Hard Real Time, a Minimal Execution Time Solution for Nonlinear SDR", IEEE Access, Vol. 8, Issue 1, pp. 158008-158025, Aug. 27, 2020.
- [72] A. Bonci, S. Longhi, and G. A. Scala. "Towards an All-Wheel Drive Motorcycle: Dynamic Modeling and Simulation", IEEE Access, Vol. 8, Issue 1, pp. 112867-112882, June 2020.
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- [70] A. Bonci, S. Longhi, E. Lorenzoni, M. Pirani "RMAS Architecture for Industrial Agents in IEC 61499" International Conference on Industry 4.0 and Smart Manufacturing, ISM 2019, Cosenza, Italy, Nov. 20-22, 2019.
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- [66] A. Bonci, S. Longhi, M. Pirani "Prospective ISO 22400 for the challenges of human-centered manufacturing" Proceedings of the 9th IFAC Conference on Manufacturing Modelling, Management & Control, MIM 2019, (available on IFAC-PapersOnLine), Berlin, Germany, August 28-30, 2019.
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Cingoli, February the 15th , 2025

Andrea Bonci

