PERSONAL INFORMATION

Massimiliano Pirani

[redacted]
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[redacted]

Sex Male | Date of Birth 07/08/1971 | Nationality Italian

RESEARCH ACTIVITY

TOPICS

Model and synthesis of nonlinear systems

- Digital signal processing
- Wiener and Volterra nonlinear systems
- Higher horder statistics
- Neural networks for the modelling and synthesis of nonlinear and chaotic systems

Control of systems with biological activity

- Remote control, control and optimization of bio-processes in particular for the treatment of waste water
- Intelligent and distributed sensors

Embedded systems

- Embedded electronics systems; architectures, design.
- Embedded operating systems and applications.
- Embedded systems's networks and Web-based technologies; IoT, IoE.
- Distributet cyber-physical systems.

Intelligent industrial automation, Industry 4.0

- Multi-agent systems.
- Cyber-physical systems with holonic structure.
- Interoperability through knowledge management and reasoning.
- Continuous improvement of production processes
- Robotics and mechatronics for the smart factory.

Process management in the building production sector

- Building Management Systems.
- Creation and cyber-physical integration of BIM systems.
- Resilience and Safety in construction processes.
- Application of holonic multi-agent systems for Lean Management in buildings.
- Cyber-physical Systems of Systems, emerging phenomena and complex systems.

RESEARCH EXPERIENCES IN THE UNIVERSITY FIELD

February 2020 - January 2023

Fixed-term assistant professor (ricercatore RTD A)

Department of Information Engineering (DII) - Polytechnic University of Marche

- Research activity within the EU Horizon 2020 project entitled "ENCORE - ENergy aware BIM Cloud Platform in a COst-effective Building REnovation Context" (g.a. 820434) CUP I36C19000090006.
- The activity consists of developing a service based on computational intelligence methods with a holonic approach for the integrated management of maintenance and management operations of residential building renovations.
- Teaching activities and teaching support.

Business or sector - Scientific research, within the scientific disciplinary sector **ING-INF/04 (Automatic control)**

September 2019 - August 2020

Postdoctoral research fellow

Department of Information Engineering (DII) - Polytechnic University of Marche

- Research activities in the context of the public selection announced with D.R. n ^ 665 of 13/06/2019 for the award of a research grant lasting 1 year, (pursuant to art. 22, paragraph 4, letter B) of Law No. 240/2010 and of the current University Regulations on research grants.
  - Project - "Automation of work planning in building renovations with a holonic approach".
  - Project reference - by the EU H2020 Project entitled "ENCORE - ENergy aware BIM Cloud Platform in a COst-effective Building REnovation Context" CUP I36C19000090006.
  - Description of the project - The activity consists of developing a reasoning method based on a holonic approach for the automatic planning of the processing phases in residential building renovation operations.

Business or sector - Scientific research, within the scientific disciplinary sector **ING-INF/04 (Automatic control)**

September 2017 - August 2019

Postdoctoral research fellow

Department of Civil, Building and Architecture Engineering - Marche Polytechnic University

- Research activities in the field of multi-agent artificial intelligence systems applied to intelligent building management. Research Grant entitled: "Re-thinking digital buildings according to the cyber-physical paradigm: modeling and development".
- The research activity includes the themes of digitization and BIM (Building Information Model) and holonic systems: for the safety of construction sites, for emergency management, augmented and mixed reality, for asset management, for continuous improvement of the construction process (Lean Management area).
- Total duration 24 months.

Business or sector - Scientific research, within the scientific disciplinary sector **ICAR/11 (Construction production)**

July 2015 – August 2017

Postdoctoral research fellow

Department of Information Engineering (DII) - Polytechnic University of Marche

- Research activities in the field of multi-agent artificial intelligence systems applied to the intelligent management of industrial production. Research Grant entitled: "Modeling strategies of the smart factory: study and development of a modeling method of the factory to allow its evaluation in terms of energy efficiency".
- The research activity focused on issues related to Industry 4.0, cyber-physical systems, management automation, the fractal factory, embedded systems for industrial automation, databases, robotics and mechatronics, artificial intelligence, process control along the life cycle and holonic systems.
- Total duration 24 months.

Business or sector - Scientific research, within the scientific disciplinary sector **ING-INF/04 (Automatic control)**

ACTIVITIES IN INTERNATIONAL CONGRESSES

October 2019

Session Chairman, invited; sessions "Cyber Physical Systems and IoT 1" e "Cyber Physical Systems and IoT 3" in IECON 2019

Chairman, sessions "Cyber Physical Systems and IoT 1" and "Cyber Physical Systems and IoT 3", at 2019 IECON – the 45th Annual Conference of the IEEE Industrial Electronics Society

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

Business or sector - Chair/Co-chair in international congress

June 2019

Session Co-coordinator, invited; session "Socio-humanitarian Artificial Intelligence (AI) Technologies" in WOSC2020

Co-chairman, session "Socio-humanitarian Artificial Intelligence (AI) Technologies", 18th Congress World Organisation of Systems and Cybernetics (WOSC2020), 16th-18th September 2020, Moscow, Russia. (www.wosc2020.org)

- www.wosc2020.org

Business or sector - Chair/Co-chair in international congress

May 2019

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.

- Oral communication by invitation: Pirani, M. "Cyber-physical systems - possible industrial applications"
- https://leanacademy.wbmil.prz.edu.pl/en/events

Business or sector – Invited speaker

June 2016

Session Chairman, invited, session "Internet of things Optimization"

Chairman, session "Internet of things Optimization", MIM 2016 8th IFAC Conference on Manufacturing Modelling, Management, and Control, 27-30 June 2016, Troyes, France.

- http://mim2016.utt.fr/

Business or sector - Chair/Co-chair in international congress

2014 - 2020

Speaker at international congresses

- Bonci, A., Longhi, S., **Pirani, M.** "*IEC 61499 Device Management Model through the lenses of RMAS*". At ISM 2020, International Conference on Industry 4.0 and Smart Manufacturing.Virtual Online Conference. 23-25 November 2020
- Stadnicka, D., Bonci, A., Lorenzoni, E., Dec, G., **Pirani, M.** "*Symbiotic cyber-physical Kanban 4.0: an Approach for SMEs*". At ETFA 2020, 25th IEEE 25th International Conference on Emerging Technologies and Factory Automation 08-11 September 2020, Vienna, Austria
- Raikov, A, **Pirani, M.** "*Theme 3 - Technology and humanity: co-developing a hybrid reality Focus – Section 1: Socio-humanitarian Artificial Intelligence (AI) Technologies*". At World Organisation of Systems and Cybernetics 18 th Congress-WOSC2020, Online event 16th-18th September 2020. (https://www.youtube.com/watch?v=Hlu5rbPLzZQ&feature=youtu.be)
- Bonci, A., Longhi, S., **Pirani, M.** "*Prospective ISO 22400 for the challenges of human-centered manufacturing*". IFAC-PapersOnLine, 52(13), 2537-2543. At MIM2019, 9th IFAC Conference on Manufacturing Modelling, Management and Control, August 28-30, 2019, Berlin, Germany
- Bonci, A., Longhi, S., **Pirani, M.** "*RMAS Architecture for Autonomic Computing in Cyber-Physical Systems*". In IECON 2019-45th Annual Conference of the IEEE Industrial Electronics Society (Vol. 1, pp. 2996-3003). IEEE. 2019.
- **Pirani, M.** "*Cyber-phisical systems - possible industrial applications*". At 9th Conference Lean Learning Academy „Cyber-physical systems – vision and reality 31 May 2019, Rzeszow University Of Technology, Poland.
- Bonci, A., **Pirani, M.**, Cucchiarelli, A., Carbonari, A., Naticchia, B., Longhi, S. "*A Review of Recursive Holarchies for Viable Systems in CPSs.*" In Proceedings of the 2018 IEEE 16th International Conference on Industrial Informatics (INDIN), pp. 37-42. IEEE 2018.
- Bonci, A., **Pirani, M.**, Carbonari, A., Naticchia, B., Cucchiarelli, A., Longhi, S. "*Holonic Overlays in Cyber-Physical System of Systems*". In Proceedings of the 2018 IEEE 23rd International Conference on Emerging Technologies and Factory Automation (ETFA), pp. 1240-1243. IEEE 2018.
- Indri, M., Trapani, S., Bonci, A., **Pirani, M.** "*Integration of a production efficiency tool with a general robot task modelling approach.*" (2018). In Conference booklet of the 2018 IEEE 23rd International Conference on Emerging Technologies and Factory Automation (ETFA), 4th-7th September 2018, Torino, Italia, p. 17.
- Bonci, A., **Pirani, M.**, Dragoni, A.F., Cucchiarelli, A., Longhi, S. "*The relational model: In search for lean and mean CPS technology.*" At 2017 IEEE 15th International Conference on Industrial

Informatics (INDIN), 24-26 July 2017, Emden, Germany.

- Stadnicka, D., **Pirani, M.**, Bonci, A., Ratnayake, R. M. C, Longhi, S. "*Self-similar computing structures for CPSs: A case study on POTS service process.*" In Proceedings of the 18th IFIP WG 5.5 Working Conference on Virtual Enterprises, pp. 157-166. PRO-VE 2017.
- Bonci, A., **Pirani, M.**, Longhi, S. "*An embedded database technology perspective in cyber-physical production systems.*" 27th International Conference on Flexible Automation and Intelligent Manufacturing, FAIM2017. Procedia Manufacturing, 2017, 11, 830-837.
- **Pirani, M.**, Bonci, A., Longhi, S. "*A scalable production efficiency tool for the robotic cloud in the fractal factory*". In Proceedings of IECON 2016-42nd Annual Conference of the IEEE Industrial Electronics Society, pp. 6847–6852. IEEE 2016.
- Bonci, A., **Pirani, M.**, Longhi, S. "*A database-centric approach for the modeling, simulation and control of cyber-physical systems in the factory of the future.*" At IFAC MIM 2016 Conference, at University of Technology of Troyes, France.
- Bonci, A., Imbrescia, S., **Pirani, M.**, Ratini, P. "*Rapid prototyping of open source ordinary differential equations solver in distributed embedded control application.*" At 2014 IEEE/ASME 10th International Conference on Mechatronic and Embedded Systems and Applications (MESA), IEEE, 2014.

Business or sector - Speaker at international congress

TEACHING ACTIVITY

November 2020

Teaching in the course of "Application and management of European funding on research and innovation" ("Domanda e gestione di finanziamenti Europei su ricerca e innovazione")

University training course for technical-administrative staff, provided by the Department of Information Engineering - DII Polytechnic University of Marche, Ancona, Italy

- Duration: 19, 20, 26 and 27 November schedule 9:00 – 12:00 (12 h).

Business or sector - Teaching Course for Technical-Administrative Staff Polytechnic University of Marche, Ancona, Italy.

July 2020

Lecture at 6th International Summer School on Industrial Agents: Engineering of Cyber-Physical Production Systems, module "Transdisciplinary approach between industrial agents and control theory for the planning and distributed control of autonomic CPPS", lecture "Approaching RMAS: Relational Multiagent Systems architecture"

6th International Summer School on Industrial Agents: Engineering of Cyber-Physical Production Systems, 29 June - 3 July 2020 International Manufacturing Centre, WMG, The University of Warwick,

- Duration: 1st July 2020, schedule 11:00 – 13:00, 16:00 – 17:30 (3,5 h).

Business or sector - Advanced training for PhD students and practitioners

February 2020

Teaching in the post-graduate course: "Architecture, Processes and Technologies Industry 4.0", didactic module of "Design and Architecture of machines and systems in logic 4.0" ("Architetture, Processi e Tecnologie Industry 4.0", modulo didattico di "Progettazione ed Architetture di macchine e impianti in logica 4.0")

Postgraduate Course, Department of Industrial Engineering and Mathematical Sciences and the Department of Information Engineering. Marche Polytechnic University.

- Duration: 4h frontal lessons.

Business or sector - Teaching Post-graduate university course, Industrie 4.0, Factory of the Future.

May 2019

Teaching in the post-graduate course: "Architecture, Processes and Technologies Industry 4.0", didactic module of "Design and Architecture of machines and

systems in logic 4.0" ("Architetture, Processi e Tecnologie Industry 4.0", modulo didattico di "Progettazione ed Architetture di macchine e impianti in logica 4.0")

Postgraduate Course, Department of Industrial Engineering and Mathematical Sciences and the Department of Information Engineering. Marche Polytechnic University.

- Duration: 4h frontal lessons.

Business or sector - Teaching Post-graduate university course, Industrie 4.0, Factory of the Future.

September 2016 – October 2017

Adjunct professor in "Mathematics"

Adjunct professor for the teaching of "Mathematics MAT / 01" in the Bachelor's Degree Course in Food Science and Technology, at the Department of Agricultural, Food and Environmental Sciences, Polytechnic University of Marche.

- 54-hour teaching course (6 CFU)
- Period: AA 2016/2017

Business or sector - University teaching.

November 2011 – October 2014

Adjunct professor in "Electronic computers and computer networks"

Adjunct professor for the teaching of "Electronic calculators and computer networks" in the Computer Science and Automation Engineering Degree Course, at the Department of Information Engineering, Faculty of Engineering, Polytechnic University of Marche.

- 72-hour teaching course (9 CFU), total of 216 hours of lessons.
- Period: AA 2011/2012, AA 2012/2013 e AA 2013/2014

Business or sector - University teaching.

August 2014 – October 2014

IFTS teacher (Higher Technical Education and Training) in "UCF-9 Software programming and security"

Form.Art.Marche, IFTS 2013 vocational training activity project POR Marche FSE 2007/2013 Expert in Visual Prototyping in Mechatronics

- Total of 25 hours of lessons. Educational activity POR Marche Ob. 2 ESF 2007/2013 Axis IV OS L. Courses of Higher Technical Training IFTS 2013 "Technician for the security of networks and systems (EXPERT IN VIRTUAL PROTOTYPING IN THE MECHATRONIC FIELD)" - cod. n. 184741. Management body: Form.Art.Marche

Business or sector - Teaching of courses derived from the European social fund, post-secondary non-university level training course.

July 2012

Teacher of the Master course in "Smart Home Engineering"

On behalf of Spes S.c.p.a., in collaboration with the Marche Polytechnic University

- Total of 16 hours of lessons. Second level Master in Smart Home Engineering, Faculty of Engineering, Polytechnic University of Marche.

Business or sector - University master teaching.

November 2005 – October 2010

Adjunct professor in "Internet for tourism"

Adjunct professor for the teaching of "Internet for tourism" in the degree course in Economics of the Territory and Tourism at the Department of Management, Faculty of Economics G. Fuà, Polytechnic University of Marche.

- 36-hour teaching course (5 CFU), total of 180 hours of lessons
- Period: AA 2005/2006, AA 2006/2007, AA 2007/2008, AA 2008/2009 e AA 2009/2010

Business or sector – University teaching.

EXPERIENCES RELATED TO TEACHING

2010 – 2018

Thesis supervisor / co-supervisor

At the Polytechnic University of Marche

- **Thesis co-supervisor:** D. Giuggioloni "Risk assessment model for real-time safety management in construction sites - risk assessment models for real-time safety management in construction", 2018, supervisor Prof. Berardo Naticchia, co-supervisor Massimo Vaccarini, Polytechnic University of Marche.
- **Thesis co-supervisor:** C. Sanguigni "Development of a cyber-physical platform for the real-time management of complex buildings - development of a cyber-physical platform for real-time management of complex buildings", 2018, supervisor Prof. Alessandro Carbonari, co-supervisor Massimo Vaccarini, Polytechnic University of Marche.
- **Thesis supervisor:** M. Rossi, "Driver Development Techniques for Peripheral Management in Real-Time Embedded Operating Systems for Automation and Control Applications", co-supervisor Dr. Andrea Bonci, 2014, Università Politecnica delle Marche.
- **Thesis supervisor:** E. Cipriani, "WiFi control infrastructure for autonomous vehicle network with Renesas RX series electronics", co-supervisor Dr. Andrea Bonci, 2014, Marche Polytechnic University**.**
- **Thesis co-supervisor:** M. Ranalli, "Study on the security of the IPv6 protocol and its implications for pervasive computing technologies in the Internet of Things", supervisor Prof. Aldo Franco Dragoni, 2015, Polytechnic University of Marche.
- **Thesis co-supervisor:** F. Lucconi "Porting on architecture arm marvell 88f6231 and comparative analysis of real-time rtai and xenomai patches for the linux kernel", 2010, supervisor Prof. Aldo Franco Dragoni, co-supervisor Prof. Massimo Conti, University Polytechnic of the Marche.

Business or sector - Thesis supervisor or co-supervisor.

2003 – 2015

Company tutor for thesis and training and orientation internships

At SPES S.c.p.a.

- Company tutor for Degree Theses: E. Pellegrini, "Mmd Filters For Predistortion Of Non-Linear Systems", Supervisor Prof. Simone Orcioni, AY 2003/2004 ", Polytechnic University of Marche.
- Company tutor for Degree Thesis: A. Baldini, "Design, development and time analysis of a real-time application for image-processing in the Xenomai environment", Supervisor Prof. Aldo Franco Dragoni, AY 2009/2010, Marche Polytechnic University.
- Company tutor for Degree Thesis: F. Lucconi, "Porting on ARM Marvell 88F6281 architecture and comparative analysis of RTAI and Xenomai real-time patches for Linux kernel", Supervisor Prof. Aldo Franco Dragoni, AY 2009/2010, Polytechnic University of the Marche.
- Company tutor for university internship: "Studies and experimentation on the rapid prototyping of advanced control applications on embedded devices equipped with Linux operating system and dedicated peripherals.". Head of Dr. Andrea Bonci, Degree Course [L] Computer and Automation Engineering AY 2013/2014, Polytechnic University of Marche.
- Company tutor for university internship: "Studies and practical experiences on Renesas SH and RX series microcontrollers aimed at optimizing the use of peripherals in embedded systems for control and automation". Head of Dr. Andrea Bonci, Degree Course [L] Computer and Automation Engineering AY 2013/2014, Polytechnic University of Marche.
- Company tutor for university internship: "Security studies and its implications for pervasive computing technologies based on IPv6". Head of Prof. Aldo Franco Dragoni, Degree Course [L] Computer and Automation Engineering AY 2013/2014, Polytechnic University of Marche.
- Company tutor for university internship: "Rapid prototyping of distributed control on embedded microcontroller systems". Head of Dr. Bonci Andrea, Degree Course [L] Computer and Automation Engineering AY 2012/2013, Polytechnic University of Marche.
- Company tutor for university internship "Learning programming techniques within the operating systems of the Linux Embedded family with particular interest in the part of device drivers". Responsible Prof. Andrea Formisano, Degree Course in Computer Science AA 2012/2013, University of Perugia.
- Company tutor for university internship: "Study and experimentation on the 'Smarty' Declarative programming framework". Responsible Prof. Sergio Tasso, Degree Course in Computer Science AA 2014/2015, University of Perugia.

Business or sector - Company contact for graduation theses and university internships.

RESEARCH PROJECTS IN THE UNIVERSITY FIELD

January 2019 – present

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

- Coordinator ATB - Institute for Applied Systems Technology Bremen GmbH, Germania
- Period: 1 January 2019 - 28 February 2022.
- Member of the working and coordination group of the beneficiary / partner UNIVPM (Polytechnic University of Marche)
- UNIVPM is leader del Work Package 3: "BIM-aided holonic management system for building renovation"
- http://encorebim.eu/
- Related publications n.: 1, 4, 5, 6, 7, 8, 9 (in Complete List of Publications).

Activity and role - Participation in the drafting of the proposal, member of the coordination group for the UNIVPM beneficiary, research activities, contribution to meetings and deliverables.

April 2018 – present

MISE PNR 2015-2020, Project title: "REACT - Innovative methods and tools for REACTive Product Design and Manufacturing".

MIUR PON, Area of Specialization: Intelligent Factory

- Lead Partner: INNOVAAL Public-Private Aggregation for Active & Assisted Living S.c.a.r.l. (Lecce, Italy).
- Project start: 1 April 2018. Duration 30 months.
- Member of the working group of the beneficiary UNIVPM (Polytechnic University of Marche) for realization objective 2, OR2: Study and development of the REACTive smart production platform.
- Related publications n.: 1, 2, 5, 6, 7, 8 (in Complete List of Publications).

Activity and role - Participation in the drafting of the proposal, member of the coordination group for the UNIVPM beneficiary, research activities, contributions to meetings and deliverables.

August 2015 – August 2017

Intelligent Factory Cluster Project 1, Project title: "Sustainable Manufacturing " (n. CTN01_00163_148175).

MIUR Directorial Decree n. 257 of 14 December 2012, Area of Specialization: Intelligent Factory. Intelligent Factory Cluster (https://www.fabbricaintelligente.it/progetti/)

- Scientific Responsible: Tullio A.M. Tolio - Research and Training, ITIA-CNR.
- Project start: 1 April 2018 Duration 30 months.
- Industrial Contact: Meccanica FINNORD SpA, Luino (VA).
- Member of the working group of the beneficiary UNIVPM (Polytechnic University of Marche).
- Related publications n.: 11, 19 (in Complete List of Publications).

Activity and role - Research activities, contributions to meetings and deliverables.

September 2019 – present

POR MARCHE FESR 2014/2020, Project title: "HD3Flab: Laboratory of the Factory of the digital future, flexible and oriented towards humans"

Marche Region from the Operational Program Region of the European Regional Development Fund POR MARCHE FESR 2014 / 2020- AXIS 1 - SO 2- ACTION 2.1.

- Lead partner: Marche Polytechnic University, Responsible. Scientific Prof. Michele Germani.
- Project start: September 2019 Duration 36 months + 4 years laboratory part.
- Member of the UNIVPM working groups on the three sub-projects:
  - Mercury: "sMart sEcuRe deCentralized indUstRY" (Filippetti S.p.a. - University of Camerino).
  - Urra - "Usability of robots and reconfigurability of processes: enabling technologies and use cases" (Loccioni - Marche Polytechnic University).

- i-labs laboratory https://www.i-labs.it/it
- Related publications n.: 1, 2, 5, 6, 7, 8 (in Complete List of Publications).

Activity and role - Participation in the drafting of the proposal, member of the working group, research activities, contributions to meetings and deliverables.

January 2017 – December 2018

University research, "Re-Thinking Digital Buildings according to the cyber-physical paradigm: modeling and development" paradigm: modelling and development"

University Strategic Research type A, 2016, Marche Polytechnic University

- Coordinator Prof. Alessandro Carbonari.
- Project start: 10 January 2017, Duration 24 months.
- Related pubications n.: 10, 12, 15 (in Complete List of Publications).

Activity and role - Member of the working group, research activity.

January 2017 – December 2018

University research, "Real-time Multi-Agent Systems for cyber-physical systems"

University Strategic Research type B, 2016, Marche Polytechnic University

- Coordinator Prof. Aldo Franco Dragoni.
- Project start: 10 January 2017, Duration 24 months.
- Related publications n.: 26, 27 (in Complete List of Publications).

Activity and role - Member of the working group, research activity.

RESEARCH PROJECTS CARRIED OUT IN THE PROFESSIONAL FIELD

June 2008 – February 2013

FP7-KBBE CAFE "Computer-aided food processes for control engineering"

Programme FP7-KBBE - Specific Programme "Cooperation": Food, Agriculture and Biotechnology. Topic KBBE-2007-2-3-01 - Smart control for improved food and feed technologies. Call for proposal FP7-KBBE-2007-1. Funding Scheme CP-IP - Large-scale integrating project Grant agreement ID: 212754.

- Coordinator, Denis Dochain, CESAME, Université Catolique de Luovain, Begium.
- Period: 1st June 2008 - 28th February 2013.
- Participant in the working group of the beneficiary SPES S.c.p.a.
- Management and coordination role for the "Integration" Work Package (see attached letter from coordinator Denis Dochain, "Letter_Denis_Dochain.pdf").

Activity and role - **Work Package Leader**, project management, research activities, contributions to meetings and deliverables .

September 2010 – August 2014

FP7-KBBE FRISBEE " Food Refrigeration Innovations for Safety, consumer Benefit, Environmental impact and Energy optimization along cold chain in Europe"

Programme FP7-KBBE - Specific Programme "Cooperation": Food, Agriculture and Biotechnology. Topic KBBE-2009-2-3-01 - New solutions for improving refrigeration technologies along the food chain. Call for proposal FP7-KBBE-2009-3. Funding Scheme CP-IP - Large-scale integrating project. Grant agreement ID: 245288.

- Coordinator, Graciela Alvarez, IRSTEA, Institut National De Recherche En Sciences Et Technologies Pour l'Environnement Et L'agriculture, France.
- Period: 1st September 2010 – 31st August 2014.
- http://www.frisbee-project.eu/
- Participant in the working group of the beneficiary SPES s.c.p.a.
- Role of management and coordination of the tasks of responsibility of the beneficiary (see letter from coordinator Graciela Alvarez attached, "Letter_Graciela_Alvarez.pdf").

Activity and role - **Task Leader**, project management, research activities, contributions to meetings and deliverables..

May 2004 – December 2004

FP5-IST TELEMAC (IST), “Tele-monitoring and advanced telecontrol of high yield wastewater treatment plants”

Programme FP5-IST - Programme for research, technological development and demonstration on a "User-friendly information society, 1998-2002". Topic(s) 2000-1.4.1 - Intelligent environmental management, risk and emergency systems. Grant agreement ID: IST-2000-28156.

- Coordinator, Bruno Le Dantec, GEIE ERCIM, Sophia Antipolis, France
- Period: 1st September 2001 - 31st December 2004.
- Participant in the work group of the beneficiary SPES S.c.r.l.

Activity and role - Research activities, contributions to meetings and deliverables.

July 2004 – October 2005

FP5 EU-INCO EOLI “Efficient operation of urban wastewater treatment plants”

Programme FP5-INCO. Project no. ICA4-CT-2002-10012.

- Coordinator, Denis Dochain, CESAME, Université Catolique de Luovain, Begium.
- Period: 1 November 2002 – 31 October 2005.
- https://sites.uclouvain.be/inma/EOLI/index.html
- Participant in the work group of the beneficiary SPES S.c.r.l.
- Related publications n.: 37, 38, 39, 40, 42, 46 (in Complete List of Publications).

Activity and role - Research activities, contributions to meetings and deliverables.

February 2011 – January 2014

FP7-REGIONS JADE “Joining innovative Approaches for the integration and Development of transnational knowledge of clusters policies related to independent of Elderly”

Programme FP7-REGIONS - Specific Programme "Capacities": Regions of knowledge and support for regional research-driven clusters. Topic REGIONS - Regions of Knowledge. Call for proposal FP7-REGIONS-2010-1. Grant agreement ID: 266422.

- Coordinator, SVIM - SVILUPPO MARCHE SPA SOCIETA UNIPERSONALE, Ancona, Italy.
- Period: 1st February 2011 - 31st January 2014.
- Participant in the working group of the beneficiary SPES S.c.p.a.

Activity and role – Research activity.

June 2009 – September 2012

INDUSTRIA 2015 EROD “Energy Reduction Oriented Design”

Ministry of Economic Development within the Industrial Innovation Projects for Energy Efficiency - Industry 2015 - with Ministerial Decree March 5, 2008.

- Coordinator, Prof. Michele Germani, Polytechnic University of Marche, Italy.
- http://www.erod.it
- Participant in the working group of the beneficiary SPES S.c.p.a.

Activity and role - Research activities, contributions to meetings and deliverables.

April 2011 – December 2012

INDUSTRIA 2015, E-KITCHEN "E-Kitchen: smart kitchen with high usability" (“E-Kitchen: cucina intelligente ad elevata usabilità”)

Ministry of Economic Development within the "Made in Italy" Industrial Innovation Program - Industry 2015 - with Ministerial Decree March 5, 2008.

- Coordinator, Lube Industries S.r.l., Treia (MC), Italia.
- Participant in the working group of the beneficiary SPES S.c.p.a.

Activity and role - Research activities, contributions to meetings and deliverables.

September 2010 – September 2013

INDUSTRIA 2015, HYBRID "Multifunction Hoods" (“Cappe Multifunzione”)

Ministry of Economic Development within the "Made in Italy" Industrial Innovation Program - Industry 2015 - with Ministerial Decree March 5, 2008.

- Coordinator, Faber S.p.A.., Fabriano (AN), Italia
- Participant in the working group of the beneficiary SPES S.c.p.a.

Activity and role – Research activity.

June 2011 – March 2014

INDUSTRIA 2015, OSTIS "Operating System and Tools for Interoperable smart electrical household appliances"

Ministry of Economic Development within the "Made in Italy" Industrial Innovation Program - Industry 2015 - with Ministerial Decree March 5, 2008.

- Coordinator, Consorzio CETMA, Brindisi, Italia.
- Participant in the working group of the beneficiary SPES S.c.p.a.

Activity and role - Research activities, contributions to meetings and deliverables.

November 2008 – September 2010

Regional Project Law 598/94, "Innovative process control system in wastewater treatment plants" ("Innovativo sistema di controllo di processo negli impianti di trattamento delle acque reflue")

Por Marche Fesr 2007-2013 Intervento 1.1.1.4.1 "Promozione della ricerca industriale e dello sviluppo sperimentale nelle PMI" (art. 11 Legge 598/94).

- Supervision and coordination of the working group of the beneficiary SPES s.c.p.a.

Activity and role - Research and coordination, design and development of the DSS (Decision Support System), contributions to meetings, deliverables and final report.

WORK AND RESEARCH EXPERIENCE IN THE PROFESSIONAL FIELD

August 2017 – present

Industry 4.0 certification consultant

Bureau Veritas S. A., Meccano S.p.a.

- Consultancy for the attestation of conformity of capital goods pursuant to Article 1 (Annex A / B) of the 2017 Budget Law, Law 11 December 2016, No. 262 at Bureau Veritas S.A. (Via Miramare, 15 - 20126 Milan) and Meccano S.p.a. (Fabriano, AN).
- Qualified through training course: SENIOR LEVEL TRAINING COURSE, at Bureau Veritas headquarters - Via Miramare, 15 - 20126 Milan. Duration 8 h. Course date 30/11/2017.

Business or sector - Industrie 4.0, factory of the future. Networking, cloud systems, data acquisition and control, CNC / PLC, MES, ERP, PLM, Cyber Security, Internet of Things.

July 2015 – present

Research and development consultant, Project Manager, Research Manager

Private companies operating mainly in the electronics and software sector

- Research and development activities in artificial intelligence for cyber-physical systems, with applications to robotics and industrial automation.
- Planning, consulting and drafting of regional, national and European projects. At: Eletica S.r.l. (Castelplanio, AN, Italy), Mc2 S.r.l. (Castelbellino, AN, Italy), Knowledge Innovation Management S.L.U. (Barcelona, Spain).
- Design activities in the field of Embedded Electronics as Senior Developer.
- Project leader and manager for embedded product software, such as: Embedded software design and development for Kettler ERGO C10 bike, Heinz Kettler GmbH & Co. KG (Ense-Parsit, Germany) (http://de.kettler.net/); BRITA GmbH (Taunusstein, Germany); Elica S.p.a. (Fabriano-AN). Research and development activities in the fields of: Hardware, Firmware and Software Design, Development, and Project Management. Sector: Fitness, Consumer Electronics.
- Research and development activities in the field of artificial intelligence, digital signal processing, machine learning, embedded computer architectures and software engineering, Industry 4.0, factory of the future, high-tech design, electronics, robotics, information and communication technology,

computer science, smart sensors, fuzzy logic and neural networks, real-time and distributed control systems for industrial automation, Web and Knowledge based systems
- Project management and Human Resources.
- Development of industrial, consumer, environmental, and home automation products.

Business or sector – Consultancy in research, management, design, hardware and software development.

July 2004 – June 2015

Research and Consultancy Manager
Human Resources and Training
Head of software R&D
Senior Software Developer

SPES S.c.p.a. Fabriano, Italy, www.spesonline.eu

- Business manager and expert for the design, editing, management and execution of European, National and Regional funded research projects.
- Company contact person for SPES S.c.p.a for relations with universities for collaborations in teaching activities, research projects (in particular with the Marche Polytechnic University)
- Company manager for the recruitment and selection of personnel (from April 2006 to November 2011), 495 interviews of candidates (in the period the company has grown from about 30 employees to about 100).
- Company manager for relations and collaborations with universities and research institutes; company tutor for degree theses, research doctorates and internships.
- Company manager for the organization of technical and managerial training and training activities.
- Company manager for the development of software projects and embedded electronics products.
- Creator and project leader for research activities in the field of distributed and embedded architecture centered on databases to be applied on all monitoring and intelligent remote control products in industrial automation, environmental and home automation applications (in particular PLT-Line products , Gu @ rdian Evo, Keykratos Evo).
- Company expert in digital signal processing, machine learning, embedded computer architectures, software engineering, embedded electronics, control systems, intelligent sensors, artificial intelligence, fuzzy logic and neural networks, information technology, real-time distributed systems for industrial automation , consumer and environmental products, applied research in home automation, automated test systems, motor control, human machine interfaces, Web and knowledge based systems.

Business or sector - Electronics and software design. Research and development and technological innovation projects.

May 2004 – June 2004

Collaboration contract for research and development activities in the FP5 Telemac project

Spes S.c.r.l. Fabriano (AN), Italy

- Software development for research activities in the European FP5-IST project "TELEMAC: TELEMonitoring and Advanced teleControl of high yield wastewater treatment plants".

Business or sector - Electronics and telecommunications, software.

January 2004 – June 2004

Collaboration contract for "FPGA coding-decoding system for optical fiber transmissions"

Collaboration project between the Polytechnic University of Marche and Marconi Communications Defense Systems Ltd (Genoa). Responsible: Prof. Giovanni Cancellieri and Prof. Massimo Conti, Polytechnic University of Marche.

- Forward Error Correction algorithm implemented on FPGA.
- Duration 6 months, beginning January 2004.

Business or sector - Electronics and telecommunications.

December 2003 – May 2004

Collaboration contract for "Study of digital predistortion systems for loudspeaker

systems"

F.B.T. Elettronica S.p.A. (Recanati, MC), Italy

- Study, simulation, implementation and laboratory tests on the linearization of loudspeaker systems using advanced Digital Signal Processing techniques.
- Duration 6 months, beginning December 2003.

Business or sector - Production of high quality audio systems.

ASSIGNMENTS AND MEMBERSHIP

May 2018 – July 2018

Member of the judging commission - European Open Procedure Competition

RUP Fondo For.Te., Roma, Italy

- Member of the judging commission - European Open Procedure for the award of development, maintenance, adaptation and assistance services to the information system of the For.Te Fund - CIG: 7421028A07.
- For.Te. is the National Interprofessional Joint Fund for Continuing Education established by Ministerial Decree of 31 October 2002, pursuant to art. 118, Law No. 388, as amended, following the interconfederal agreement of 25 July 2001, as amended on 31 October 2007, by Confcommercio, Confetra, CGIL, CISL and UIL.

Business or sector - Member of the public procurement commission.

September 2017 – August 2019

Representative of Research Fellows

DICEA Department of Civil, Construction and Architecture Engineering of the Polytechnic University of Marche

- Representative of Research Fellows in the CdD (Department Council) of the Department of Civil Engineering, Construction and Architecture (DICEA) of the Polytechnic University of Marche.

Business or sector – Department Council.

July 2020 – present

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

IEEE IES Technical Committee on Technology Ethics and Society

- This committee aims to provide a forum for researchers and practitioners to exchange their latest achievements and to identify critical issues and challenges for future investigation on Machine Ethics, Artificial Intelligence, Technology Ethical Impact, Societal Implications etc
- Chair Stamatis Karnouskos, SAP Research, Walldorf, Germany.
- https://tes.ieee-ies.org/

Business or sector - Member of the international technical committee.

July 2018 – present

Member of the IEEE Technical Committee on Industrial Agents (TC-IA)

IEEE IES Technical Committee on Industrial Agents

- Invited as a member of the technical committee which aims to develop and apply the technology of industrial agents to the production, services and infrastructure sectors.
- The Technical Committee aims to provide a forum where researchers and application sector specialists can come together to continue the development and application of industrial agent technology in production, services and infrastructure sectors.
- Chair Paulo Leitão, Polytechnic Institute of Bragança, Portugal
- https://tcia.ieee-ies.org/

Business or sector - Member of the international technical committee

October 2016 – present

Member of Working Group P2660.1 for IEEE SA standards

WG P2660.1 for IEEE STANDARDS ASSOCIATION entitled "Recommendation Practices on Industrial Agents: Integration of Software Agents and Low Level Automation Functions"

- Invited as a member of the working group by the director (chairman) Paulo Leitão, Instituto Politécnico de Bragança, Portugal.
- https://standards.ieee.org/project/2660_1.html

Business or sector - Member of the international technical committee, works, meetings and drafting of the standard.

August 2015 – present

Registered expert for the European Commission since 2015

Profile no. EX2015D234217

- https://ec.europa.eu/research/participants/experts

Business or sector - Experts for the evaluation of project proposals of the European Commission.

May 2018

Invited External Peer nel LEaDing Fellows Postdoc Panel - Horizon2020 Marie Skłodowska-Curie COFUND scheme

LEaDing Fellows Postdocs Programme

- https://leadingfellows.eu/

Business or sector - Member of the evaluation panel of candidates' profiles and related research projects.

October 2017 – August 2019

Reviewer of international journals and conference proceedings

- Automatica, Elsevier. Ltd
- Intelligent Industrial Systems, Springer
- Transactions on Industrial Informatics, IES IEEE
- Kybernetes, Emerald Insight
- ISARC 36th International Symposium on Automation and Robotics in Construction
- IECON 2019 - 45th Annual Conference of the IEEE Industrial Electronics Society
- IEEE/ASME Transactions on Mechatronics
- International Journal of Applied Systemic Studies, Inderscience
- IEEE Journal of Emerging and Selected Topics in Industrial Electronics
- International Journal of Robotic Engineering

Business or sector - Peer reviewer.

May 2018 – present

Membership IEEE

- IEEE Membership (3 years)
- IEEE Industrial Electronics Society Membership (3 years)
- IEEE Standards Association Individual Membership (2 years)
- IEEE Systems, Man, and Cybernetics Society Membership (2 years)
- IEEE Robotics and Automation Society Membership (2 years)
- IEEE Society on Social Implications of Technology (1 year)
- IEEE Digital Reality Community (1 year)

Attività o settore - Membro IEEE

COURSES AND CERTIFICATIONS

November 2014 – November 2020

Training courses for the design and management of projects funded by the European Union Research and Innovation Framework Programs

APRE – Agenzia per la Promozione della Ricerca Europea – and Europe Direct (certificates available on request)

- Ancona, 12th January 2021, “VERSO I NUOVI BANDI MSCA E ERC IN HORIZON EUROPE: LE PRINCIPALI NOVITÀ”
- Ancona, 10th November 2020, “VERSO HORIZON EUROPE”
- Ancona, 29th Septmeber 2020, 6, 13 Ottobre 2020, “Verso Horizon Europe (2021-2027)”
- Ancona, 5, 6, 8 May 2020, “Laboratorio sull’attività di rendicontazione nel programma Horizon 2020”
- Ancona, 29th January 2020, “Principi etici e data protection nella redazione dei progetti H2020”
- Ancona 26th November 2019, Europe Direct Seminar: “Il futuro dell’Europa e le opportunità di finanziamento in Horizon Europe”
- Ancona, 19th September 2018: *“Horizon 2020 – Work Programme 2018-2020 in Horizon 2020.”*
- Ancona, 30th November 2016: *“Come massimizzare l’impatto in Horizon 2020, Comunicazione e Disseminazione”*.
- Roma (c/o APRE), 24th March 2016: *“Il Business Plan in Horizon 2020”*.
- Ancona, 16 March 2016: *“Gli aspetti legali e finanziari di un progetto HORIZON 20200: dalla proposta alla gestione del Grant Agreement”*
- Webinar: “*Strumento PMI”*, 26th February 2016”.
- Ancona, 27th October 2015: *“Horizon 2020, il nuovo programma quadro in ricerca e innovazione: opportunità per il tema salute”*.
- Ancona, 19th May 2015: *“Le Marie Skłodowska-curie (MSCA) in Horizon 2020”*.
- Ancona, 26th November 2014: *“Horizon 2020, European Research Council (ERC), Future and Emerging Technologies (FET): come presentare una proposta di successo”*.

November 2017

Senior Level Training Course for Industry 4.0 certification

Bureau Veritas S. A., Milano, Italia

- Training course for consultancy activities for the attestation of conformity of capital goods pursuant to Article 1 (Annex A / B) of the 2017 Budget Law, Law 11 December 2016, No. 262.
- Duration 8 h. Course date 30/11/2017.

EDUCATION AND TRAINING

November 2000 – October 2003

PhD in "Electronic and Telecommunications Engineering" (SSD ING-INF/01)

PhD in Electronics and Telecommunications Engineering (SSD ING-INF / 01) at the Department of Electronics and Automation, Faculty of Engineering, Polytechnic University of Marche.

- Title of Doctoral Thesis “Stochastic Identification of Nonlinear Systems of the Wiener-Volterra Class”, Tutor Prof. Claudio Turchetti.
- Research themes: higher order statistics, non-linear systems, Digital Signal Processing; conversion of A / D and D / A signals, sampling, filtering and signal processing.
- PhD with co-financed grant (FBT Elettronica S.p.a., Recanati, Italy) at the Polytechnic University of Marche, Ancona, Italy.

October 1990 – July 2000

Master's Degree in "Electronic Engineering"

Faculty of Engineering, Polytechnic University of Marche, Ancona, Italy.

- Thesis entitled: “The discrete Hilbert Transformation in the analysis of vocal signals”, supervisor Prof. Claudio Turchetti.
- Specialization in microelectronics, Digital Signal Processing and solid state physics.

PERSONAL SKILLS

Mother language: Italian

Other languages

UNDERSTANDING		SPEAKING		WRITING
Listening	Reading	Spoken interaction	Spoken production	
English	B2	C2	C1	C1	C2

Levels: A1/A2: Basic user - B1/B2: Independent user - C1/C2 Proficient user
Common European Framework of Reference for Languages

Relational skills and competences

- Ability to work in a team acquired during professional and research activities in carrying out various projects and jobs. Communication skills also in commercial and investor contexts, beyond technical, scientific and technological skills.
- Ability to establish an understanding for the achievement of a common goal thanks to the refinement of emotional intelligence skills and evaluation of the behavioral and personological characteristics of the interlocutors acquired also during the recruitment and selection activity in the company.

Organizational and management skills

- Project Management skills developed during the coordination and management of numerous work and research projects. The approach is based on authority and example with the aim of stimulating enthusiasm and proposing ideas for solving problems, creating a collaborative and comfortable working climate.
- Ability to deal with the organization and management of activities with a multi-disciplinary and trans-disciplinary approach with continuous updating even in fields that go beyond the disciplines strictly relevant to Information and Communication Technologies.

Professional skills

- Skills to tackle problems and projects from a broad perspective, trying to find the best solution in the balance between the quality of the expected results and the realistically available resources. Research and in-depth study skills in the field of disruptive innovation.
- Approach to problems oriented to practical applications given the experience of engineer and business manager.
- Attitude to problem solving. Ability to reorganize and re-plan activities to achieve objectives in the event of unforeseen events or changes in specifications after the project has started.
- Measurement and analysis are fundamental in both management and planning: "You can't control what you can't measure".

Digital skills

SELF ASSESSMENT				
Information processing	Communication	Content creation	Safety	Problem solving
Proficient user	Proficient user	Proficient user	Proficient user	Proficient user

Levels: Basic user - Independent user - Proficient user
Digital competences - Self-assessment grid

Excellent command of Microsoft Office ™ tools

▪ Knowledge of many programming languages and development tools. Specialist in GNU / Linux type platforms.

▪ Embedded systems programming, object-oriented, functional, logical, declarative and Web programming.

Other skills

- ELECTRONICS and COMMUNICATIONS skills
  - Industrial Cyber Physical Systems
  - Cyber security
  - Embedded distributed intelligent agent systems
  - Control and automation
  - Study and development of digital predistorsion for loudspeaker systems
  - Algorithms and methods for the identification and modelling of non-linear Wiener-Volterra systems-
  - Algorithms for non-linear multidimensional filtering.
  - Voice-speech recognition and synthesis by Digital Signal Processing.
  - Hilbert transform by filtering in VHDL on Altera FLEX FPGA.
  - Coder-Decoder with Forward Error Correction based on BGP codes at 2.66 GHz on Altera

Stratix GX, for optic fiber transmissions.
- Adaptive nonlinear filtering.
- Machine learning by Bayesian methods.
- Decision Support Systems, artificial intelligence
- Distributed Embedded Databases.
- Internetworking of the future.
- Software and Firmware for microcontrollers/processors, operating system development, drivers, toolchain development for ARM and Renesas SH2A.and STM32F4/F7.
- Protocols: IPv4 and IPv6, TCP/IP, Ethernet, WiFi, RS232/485, RF (DECT, ZigBee, 6LoWPAN), USB e GSM.
- Neural Networks.
- HOS (Higher Order statistics) and Functional Analysis in Mathematics.
- Embedded Systems for Process Automation, Industrial automation.

- INTERNET and WEB skills
  - IoT and systems-of-systems
  - Holonic systems for industry and multiagent systems
  - Telemonitoring and control of industrial and bioprocess plants.
  - Of the Selenium Web framework for automated test and access of Web sites
  - XML-based protocols
  - Real Time and Temporal databases, clustering and maintenance.
  - Tunnelling and security by cryptographic techniques.
  - App and Web-based applications for the remote access to distributed information.
  - Push technologies.
  - Server-Side programming: Django, Python, Node JS, PhP, Apache Server, Tomcat, JSP.
  - QoS.
  - Networking, Netfilter/Ipchains.
  - Client-side applications based on HTML5, CSS, XML, Javascript.
  - Semantic Web, RDF, OWL, ifcOWL

- SOFTWARE and PROGRAMMING
  - Protegé, OnTop, Datalog
  - Eclipse
  - Embedded Wizard STMCube32, Renesas Development Tools for MCUs, AtollicTRUEStudio
  - Matlab, Octave, SAGE.
  - VHDL, Assembly, C, C++, Pascal, Lisp, Prolog, Linux Bash Scripting, GNU tools, Sed, Awk, GNUmake, Tcl/Tk, CGI scripting, HTML, Javascript, XML, Java, ASP, PHP, JSP, Perl, Python, JPython, Erlang.
  - DBMS: MySQL, PostgreSQL, SQLite, and procedural programming.
  - Linux Kernel, drivers, RTAI, Xenomai (RTOSs)
  - Autocad.
  - Concurrent version systems: CVS, CVSNT, SVN, GIT.
  - Suite Microsoft Office/OpenOffice/Libre Office.

Driving licence B

OTHER INFORMATION

Public domain software projects

- PUBLIC SCIENTIFIC SOFTWARE PROJECT

Author/Administrator of VI-Toolbox in SourceForge: "*VI-Toolbox, Volterra-Wiener System Identification Toolbox for nonlinear causal systems*", http://sourceforge.net/projects/vitoolbox/

Scholarships/Awards

Scholarships :

- Winner of a scholarship (co-financed by FBT Elettronica S.p.a., Recanati-AN, Italy) for attending the PhD in Electronics and Telecommunications Engineering at the Department of Electronics and Automation of the Polytechnic University of Marche, Ancona; period 31/10/2000 - 31/10/2003 (Tutor Prof. C. Turchetti).

- Winner of the "Young Researchers Project" scholarship (MIUR 2000 funds) with the research entitled: Study of Modeling Nonlinear Systems with Volterra Series Operators and Software Development for Identification and Simulation of Models. Period: 10/05/2002 - 10/05/2003.

PRODUCTION OF PROPOSALS FOR RESEARCH PROJECTS

August 2012 – March 2019

Project proposals submitted under the FP7 and H2020 Research and Innovation Framework Program of the European Union.

1. FP7-PEOPLE-2013-ITN MC-ITN (Proposal Id 607762), ARTICS, “Advances in Research and Training for Innovations in food Cold chainS” (as main contact for beneficiary SPES S.c.p.a.), 22/11/2012.
2. FP7-KBBE-2013-7 CP-TP (Proposal Id 613607), ANDREA “Advanced sensors and Networks for innovative Data-driven automation in food processing Research oriented” (as coordinator/scientific responsible for beneficiary SPES S.c.p.a), 05/02/2013.
3. FP7-KBBE-2013-7 CP-TP (Proposal Id 613792), VIPERE “Virtual Industrial Platform for dissemination and exploitation of European research on REfrigeration and cold chain technology to industrial Exploitation Actions” (as coordinator and scientific responsible for beneficiary SPES S.c.p.a), 05/02/2013.
4. FP7-KBBE-2013-7 CP-TP (Proposal Id 613756), SensControl “Multiparameter SENSors for real-time product quality and process performance CONTROL” (come contatto principale per beneficiario SPES S.c.p.a.), 05/02/2013.
5. FP7-KBBE-2013-7 CP-TP (Proposal Id 613722), FoodSensE “Advanced Monitoring and Prediction Of Safety and Quality for Solid Foods: An Intelligent Multi-Sensing Environment based on Non-intrusive Technologies” (as main contact for beneficiary SPES S.c.p.a.), 05/02/2013.
6. FP7-KBBE-2013-7 CP-TP (Proposal Id 613975), WATERENERGY4FOOD “Sustainable recovery of water and energy in the food industry” (as main contact for beneficiary SPES S.c.p.a.), 05/02/2013.
7. FP7 ENV.2013.WATER-INNO&DEMO-1 CP (Proposal Id 619143), H2OVampIRe “Revamping water management – towards integrated use of water, energy and resources” (as main contact for beneficiary SPES S.c.p.a.), 04/04/2013.
8. H2020-SPIRE-2014 SPIRE-01-2014 RIA (Proposal Id 636839), EPOCSI “Enhancement of industrial Processes through Optimization, integrated Control and Sustainability Improvement” (as main contact for beneficiary SPES S.c.p.a.), 20/03/2014.
9. H2020-LCE-2014-1 LCE-02-2014 RIA (Proposal Id 640847-1), PV-TEC “PV-TEC next generation solar cooling” (as main contact for beneficiary SPES S.c.p.a.), 31/03/2014.
10. H2020-SMEINST-1-2014 SME-1 (Proposal Id 651939), RELATIVE, “RELational model based Automation Technology for new generation of Industrial VLSI and Embedded systems.” (as coordinator and scientific responsible for SPES S.c.p.a), 18/06/2014.
11. H2020-FETOPEN-2014-2015-RIA FETOPEN-1-2014 RIA (Proposal Id 664966), HomeoCogLive “Homeostatic Cognition for Symbiotic Living” (as main contact for beneficiary SPES S.c.p.a.), 30/09/2014.
12. H2020-SMEINST-1-2014 SME-1 (Proposal Id 672014), CYBER-FRED, “CYBER-physical systems over Fully Relational Embedded distributed Databases for industrial automation” (as coordinator and scientific responsible for SPES S.c.p.a), 12/12/2014.
13. H2020-FETOPEN-2014-2015-RIA FETOPEN-RIA-2014-2015 RIA (Proposal Id 686851), Symbiotica “Homeostatic Cognition for the Symbiosis of Humans, Robots, and Living Environments” (as main contact for beneficiary SPES S.c.p.a.), 31/03/2015.
14. H2020-ICT-2015 ICT-24-2015 IA (Proposal Id 687738), FERMAT “FEderating Robots, machines and knowledge for the advancing MAnufacturing Technology” (project idea and main writer for beneficiaries SPES S.c.p.a. and Università Politecnica delle Marche), 14/04/2015.
15. H2020-FETOPEN-2014-2015-RIA FETOPEN-RIA-2014-2015 RIA (Proposal Id 712871), Symbiotica “Homeostatic Cognition for the Symbiosis of Humans, Robots, and Living Environments” (as main contact for beneficiary ELETICA S.r.l.), 30/09/2015.

16. H2020-GV-2015 GV-8-2015 RIA (Proposal Id 700018), MASTERPLAN “A cyber-physical system approach to the design and control of intelligent multimodal transport through electric vehicles” (project idea and main writer for beneficiary Università Politecnica delle Marche), 15/10/2015.
17. H2020-IND-CE-2016-17 FOF-11-2016 RIA (Proposal Id 723470), SIMPLER “Smart and Integrated Management and operation of world-wide industrial PLant networks driven by Environmental and social Responsibility” (project idea and main writer for beneficiary ELETICA S.r.l.), 21/01/2016.
18. H2020-SC5-2016-2017 SC5-22-2017 RIA (Proposal Id 776591), PTOLOMAUES “A Decision Support tool and framework for the governance of innovative business models in the sustainable harnessing of the full potential of cultural heritage” (project idea and main writer for beneficiary Università Politecnica delle Marche), 07/03/2017.
19. H2020-ICT-2016-2017 ICT-27-2017 RIA (Proposal Id 779575), Optimizador “New approaches to the optimization of the functioning of industrial robotic manipulators” (participant to the proposal for beneficiary Università Politecnica delle Marche), 25/04/2017.
20. H2020-SC1-FA-DTS-2018-2020 SU-TDS-02-2018 RIA (Proposal Id 825718), HYPPokRATES “Healthcare sYstems and infrastructures: data Protection and Privacy, Risk Assessment and Training for Enhancing cyberSecurity” (participant to the proposal for beneficiary Università Politecnica delle Marche), 23/04/2018.
21. H2020-NMBP-ST-IND-2018-2020 LC-EEB-02-2018 RIA (Proposal Id 820434), ENCORE "ENergy aware BIM Cloud Platform in a COst-effective Building REnovation Context", (participant to the proposal for beneficiary Università Politecnica delle Marche), 22/02/2018.
22. H2020-NMBP-ST-IND-2018-2020 DT-SPIRE-06-2019 IA (Proposal Id 869545), CONVINCE “The COgNitive processing industry Value chain IN a Circular Economy” (participant to the proposal for beneficiary Università Politecnica delle Marche), 21/02/2019.
23. H2020-ICT-2018-2020 ICT-01-2019 RIA (Proposal Id 871197), MORE “A MOdel of RElational autonomic computation for the cognitive programming of next generation of cyber-physical systems of systems” (project idea and main writer for beneficiary Università Politecnica delle Marche), 28/03/2019.
24. H2020-NMBP-TR-IND-2018-2020 DT-FOF-09-2020 IA (Proposal Id 958250), TWIN4ENERGY “Holistic cognitive digital twin based process service system (pss) for life cycle energy management of dynamic manufacturing value chains” (participant to the proposal for beneficiary Università Politecnica delle Marche), 05/02/2020.
25. H2020-NMBP-ST-IND-2018-2020 LC-EEB-08-2020 RIA (Proposal Id 958212), ART-DiTEC “Automated real-time digital twin enabled construction” (participant to the proposal for beneficiary Università Politecnica delle Marche), 05/02/2020.
26. H2020-ICT-2018-20 ICT-46-2020 RIA (Proposal Id 101015832), EQUALIA “Embodied QUery-oriented Autonomic architecture for Lean Intelligence of mechatronics Agents” (project idea and main writer for beneficiary Università Politecnica delle Marche), 17/06/2020.
27. H2020-DT-2018-2020 DT-ICT-09-2020 IA (Proposal Id 101016979), DIP4TREAT “Digital Innovation Platform for the Transformation of European Rural Ecosystems into active Agents on disruptive Technologies” (participant to the proposal for beneficiary Università Politecnica delle Marche), 17/06/2020.
28. H2020-FETPROACT-2018-2020 FETPROACT-EIC-07-2020 RIA (Proposal Id 101017713), SOLON “Socially responsible hOLONic symbiosis for hybrid-reality vocational education systems” (project idea and main writer for beneficiary Università Politecnica delle Marche), 02/07/2020.
29. H2020-EIC-FTI-2018-2020 EIC-FTI-2018-2020 IA (Proposal Id 971146), IPAQS “Intelligent Plant Scheduling and Advanced predictive control of Quality and Safety for the food industry” (participant to the proposal for beneficiary ELETICA S.r.l.), 27/10/2020.
30. H2020-LC-GD-2020 LC-GD-6-1-2020 IA (Proposal Id 101036588), ENOUGH “European food chain supply to reduce GHG emissions by 2050” (participant to the proposal for beneficiary Università Politecnica delle Marche), 26/01/2021.
31. H2020-LC-GD-2020 LC-GD-4-1-2020 IA (Proposal Id 101037137), BIM4ENERGY “HOLISTIC BUILDING INFORMATION MODEL BASED PROCESS SERVICE SYSTEM (PSS) FOR LIFE CYCLE ENERGY MANAGEMENT OF BUILDINGS” (participant to the proposal for beneficiary Università Politecnica delle Marche), 26/01/2021.
32. H2020-LC-GD-2020 LC-GD-10-3-2020 IA (Proposal Id 101037463), GreenLeARning “A platform based on Artificial Intelligence and Augmented Reality for the prediction and

illustration of the impact of human activities on the climate." (participant to the proposal for beneficiary Università Politecnica delle Marche), 26/01/2021.

Project proposals presented in other areas of European innovation programmes

- The Ambient Assisted Living Joint Programme, Evaluation call 5, AAL-2012-5-150, HELICOPTER " Healthy Life support through Comprehensive Tracking of individual and Environmental Behaviors" (participant to the proposal for beneficiary SPES S.c.p.a.), 05/09/2012
- LIFE12 ENV/IT/001195 "Aspio basin monitoring by an innovative prototype system for hydrogeological risk prevention" (as main contact for beneficiary SPES S.c.p.a.), 05/11/2012.
- Interreg Italy-Croatia CBC Programme 2014-2020, Application ID 10048624, Call for proposal 2017 Standard - Priority Axis:Environment and cultural heritage, DRONE-BOAT "Drone-boat technology for rich collaborative applications in protection and valorisation of heritage" (project idea and main writer for beneficiary Università Politecnica delle Marche), 04/07/2017.

Project proposals submitted within the National Programs

- MIUR Directorial Decree 415, Notice 391 / Ric of 5 July 2012, Call for "Smart Cities and Communities", RIGERS "Regeneration of Cities: Intelligent Buildings and Networks" (participant in the proposal for SPES S.c.p.a. in the initial phase), 9th November 2012.
- MIUR Directorial Decree 415, Notice 391 / Ric of 5 July 2012, Call "Smart Cities and Communities", FRAILTY "Strategies of a Smartcity for the Support and Prevention of Fragility in the Long-lived and Elderly Population" "(participant in the proposal for SPES Scpa in the initial phase), 9th November 2012.
- MIUR Directorial Decree 415, Notice 391 / Ric of 5 July 2012, Call "Smart Cities and Communities" HEALT @ HOME "Smart Communities serving the Citizen's Wellness" - "Smart Communities for citizens' wellness" (participant in the proposal for Scpa in the Homelab Consortium), 9th November 2012.
- MIUR Directorial Decree 415, Notice 391 / Ric of 5 July 2012, "Smart Cities and Communities" Call, SOHN "Sustainable Open Heritage Network" (participant in the proposal for SPES S.c.p.a. in the initial phase), 9th November 2012.
- MIUR Directorial Decree 415, Notice 391 / Ric of 5 July 2012, Call "Smart Cities and Communities", SIGMA 4 0E "Integrated Solution for the Management and Monitoring of Environments for Zero Emissions" (participant in the proposal for SPES Scpa in phase initial), 9th November 2012.

Project proposals presented within the Regional Programs

- POR MARCHE FESR 2014-2020 - Axis 1 - Ob 1 - Action 1.1 - Call for proposals: "Promotion of research and development in the areas of intelligent specialization", COSMOS, "Controllers with a holistic approach for cyber-physical mechatronic systems with electrical Open Source technology "(main editor and project idea for beneficiary Polytechnic University of Marche)
- POR MARCHE FESR 2014/2020 - AXIS 1 - OS 2 - ACTION 2.1.1 - SUPPORT FOR THE DEVELOPMENT OF COLLABORATIVE RESEARCH TECHNOLOGICAL PLATFORMS IN THE MBITES OF INTELLIGENT SPECIALIZATION, Mercury Project: "sMart sEcuRe deCentralized industrial" user-centered ", Project platform: HD3FLAB" Human Digital Flexible Factory of the Future Laboratory "(participant in the elaboration of the proposal for beneficiaries of the Polytechnic University of Marche and ELETICA Srl)
- POR MARCHE FESR 2014/2020 - AXIS 1 - OS 2 - ACTION 2.1.1 - SUPPORT FOR THE DEVELOPMENT OF COLLABORATIVE RESEARCH TECHNOLOGICAL PLATFORMS IN THE MBITES OF THE INTELLIGENT SPECIALIZATION, SInCoS Project: "Intelligent systems for comfort and environmental sustainability", Area : Home automation, Project platform: MIRACLE: "Marche Innovation and Research fAcilities for Connected and sustainable Living Environments" (participant in the elaboration of the proposal for ELETICA Srl beneficiary)

COMPLETE LIST OF PUBLICATIONS

January 2002 - November 2020

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