

# Dr. Elisabetta Farella

## CONTACT AND PERSONAL INFORMATION

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**Position:** Tenured Researcher, Head of E3DA Research Unit (<https://e3da.fbk.eu/>)

**Affiliation:** Digital Society Center, [Fondazione Bruno Kessler](#), Via Sommarive 18, 38123 Povo, Trento, Italy

**Website:** <https://e3da.fbk.eu/people/profile/efarella>

**Membership:** IEEE senior member, ACM member

**Orcid id:** 0000-0001-9047-9868

**Scopus id:** 8536461600

## RESEARCH INTERESTS

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Networked energy efficient embedded systems, Internet of Things, Wearable systems and computing, TinyML, AI at the edge, signal processing, wireless sensor networks, smart objects, ambient intelligence, pervasive computing, and human-computer interaction.

## EDUCATION AND CERTIFICATIONS

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- December 18<sup>th</sup>, 2023 **National Scientific qualification** as both associate and full professor in the Italian higher education system, in the call 2021/2023 (Ministerial Decree n. 553/2021 and 589/2021) for the disciplinary field of 09/H1 Information processing systems. (Academic Recruitment Field 09/H - Computer engineering, according to the national classification).
- March 2005 **PhD in Computer Science and Electronics Engineering** from University of Ferrara, Italy – *Thesis Title: Natural User Interfaces for Ambient Intelligence Applications*. Advisors: Prof. Alessandro Bogliolo, Prof. Luca Benini. The PhD studentship was funded by the CINECA Supercomputing Center.
- May 2001 **Habilitation degree** for Italian Engineering Profession
- Feb. 2001 **Master Degree in Electrical Engineering** at the University of Bologna. *Thesis Title: Speech Enhancement in Noisy Environments for Handheld Devices*. Advisors: Prof. Bruno Riccò, Prof. Luca Benini

## ACADEMIC AND RESEARCH POSITIONS

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Dec 2016 - present	<b>Fondazione Bruno Kessler, IT</b> <i>Digital Society Center</i> Tenured Researcher permanent position; Head of E3DA Research Unit
Feb 2014 - Dec 2016	<i>ICT Center</i> Tenure Track position and Head of Unit of the Research Group <a href="#">E3DA - Energy Efficient Embedded Digital Architectures</a>
Sept 2007 - Jan 2014	<b>University of Bologna, IT</b> <i>Department of Electrical, Electronic and Information Engineering "Guglielmo Marconi" (DEI), formerly Department of Electronics, Computer Science and Systems (DEIS)</i> Research fellow on EU project funding and co-funding from Department integrated budget. Project management and research on networked energy-efficient embedded systems and wearable computing.
July 2005 – June 2007	Post-Doctoral Research Fellow in the Micrel Lab of Professor Bruno Riccò and Professor Luca Benini
From 2002	Adjunct professor in the following courses: Electronics LB in A.Y. 2002/2003, Digital Electronic Circuits LA in A.Y. 2008/2009, Electronics T1 from A.Y. 2010/2011, 2011/2012 and 2012/2013, Electronic Industrial Systems Architecture and Programming Laboratory T-A A.Y.2014/2015 and 2015/2016

at University of Bologna, School of Engineering (see section 7.8 for details on teaching activity).

2005 -2007 & 2009-2014;	<b>T3LAB, IT</b> Supervisor and scientific coordinator at T3LAB <sup>1</sup> , a joint research consortium between the University of Bologna and Emilia Romagna industries, of 3 teams of researchers in the field of energy-efficient embedded systems and wireless sensor networks.
2005 - 2007	<b>CINECA, IT</b> Research fellow at CINECA – Research on wireless HMI and wearables in VR environments
March 2001 – Feb 2002	Junior Research Fellow at DEIS - <b>University of Bologna</b> and <b>CINECA</b> Vis.I.T Lab to develop a project for the design and implementation of an ultra-portable, wearable and wireless interface device for navigation in immersive virtual environments in the Cultural Heritage domain. The research project was selected and funded by <b>Regione Emilia Romagna</b> under the framework Spinner.

## OTHER PROFESSIONAL EXPERIENCES

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### EU projects Evaluator

- Expert evaluator for the Academy of Finland from 2019
- Expert evaluator for H2020 and JE EU funding programs .
- Expert monitor for several EU projects in FP7 and H2020 funding programs

### Consultancy

- From 2012 to 2014, supporting companies, research centres, and SMEs in the preparation of FP7 research project proposals.

## ADVISING AND MENTORING

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PhDs	<b>Supervisor:</b> Manuele Rusci (XXX cycle – UNIBO ETTT), Davide Giovanelli (XXXI cycle – UNIBO ETTT), Gianmarco Cerutti (XXXIII cycle -UNIBO ETTT), Velu Kumaravel (XXXIV cycle – UNITN CIMEC), Alessandro Bonfiglio (XXXVII cycle – UNITN-FBK IID), Stefano Ciapponi, Michele Romani and Alberto Ancilotto (XXXIX cycle – UNITN IECS) <b>Co-advisor:</b> Elia Leoni (XXXV cycle – UNIBO ETTT), Anil Osman Tur (XXXVII – UNITN IECS), Piero Zappi (XXI cycle), Marco Benocci (XXII), Bojan Milosevic (XXV), Filippo Casamassima (XXVIII), Simone Benatti (XXVIII) Six of them were enrolled at the School of Electronics, Telecommunications and Information Technologies Engineering at the University of Bologna, two of them enrolled at the doctoral schools in conjunction with the DEI department at the University of Bologna and Fondazione Bruno Kessler, and 1 PhD student is enrolled at Doctoral School in Cognitive and Brain Sciences, University of Trento.
PostDocs	All PhDs students mentioned above, after graduation prosecuted with post-doc contracts under my supervision (average 2-3 years)
Interns	<b>Co-advisor at DEI, University of Bologna</b> , for many International research interns from 2003 (e.g. Eng. Omar Cafini, Eng. Paolo Lombardo, Eng. Alberto

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<sup>1</sup> <http://www.t3lab.it/en/>

Masala, Dr Giovanna Migliorelli, Eng. Derek Casamenti, Eng. Luca Neri, Eng. Marco Marchesi, Eng. Matteo Rossi, Eng. Marco Tomasini, Eng. Leonardo Guardati).

**Principal advisor at E3DA FBK** (e.g. Eng. Davide Giovanelli, Eng. Davide Mariz, Braam Tertoolen, Rahul Prasad, Mehmet Koral, Ramez Ghobrial, Luca Scotton, Alberto Ancillotto, Michele Brugnara, Anisha Mohamed Sahabdeen, Francesco Paissan, Matteo Beltrami, Edoardo Castagnini, Gabriele Santini).

**Supervisor at T3LAB** for Mirko Falavigna, Alessandra Rega, Luigi Guarandelli (research group on wireless sensor networks and localization); Paolo Piazza, Sebastian Adami, Carmelo Occhipinti (research group on RFID); Riccardo Cottone, Lorenzo Tomasi, Alberto Bordoni (research group on Smart Homes)

International students

**Co-supervisor of student internships at DEI, University of Bologna:** Mashan Rofuei from UCLA Wireless Health Lab on “Battery-Aware Power Management Techniques for Wearable Haptic Nodes”, Clemens Lombriser from Wearable Lab (ETHZ) on data collection for ambient intelligence applications.

**External supervisor** of the work of Evelien Nackaerts (Ph.D. student - Neuromotor Rehabilitation Research Group Department of Rehabilitation Sciences - KU Leuven) on “Technology-assisted writing training in Parkinson’s disease: the effect of feedback modulations”

Theses

**Advisor or co-advisor** in more than 50 master’s and 60 bachelor’s theses in electrical and computer engineering since 2002. Main topics: human-computer interaction (HCI), wireless sensor networks, ambient intelligence, gesture interfaces, natural interaction devices, body area networks, wearable computing, TinyML, IoT

- As E3DA unit head, I coordinate the activity of one senior researcher, 3 junior technologists/researchers, 2 PhDs
- As a senior research fellow at the University of Bologna, I coordinated the activities on HCI, ambient intelligence and wearable computing inside the research group of Prof. Benini.

## ACADEMIC COMMITTEES

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- Member of the Doctoral Council of the Doctorate Program in Industrial Innovation co-founded by the University of Trento and the Fondazione Bruno Kessler, from A.y. 2024-25
- Member of the Doctoral Council of the Doctoral School in Cognitive and Brain Sciences, University of Trento from 2018
- Member of the Doctoral Committee for the XXX, XXXI, XXXII and XXXV PhD cycle – ETTT doctoral school – DEI, University of Bologna
- Member of the degree board at DEI - University of Bologna (*Consiglio di Corso di Laurea in Ingegneria Elettronica e delle Telecomunicazioni*) from 2014
- International external member of the Doctoral reviewing committee for the thesis defence of Juan Li, PhD candidate at Universidad Politécnica de Madrid, School of Telecommunications Engineering, with the thesis “A new efficient method for pose estimation and tracking of Personal Devices. Application to interaction in smart spaces” (2016)
- International external member of the Doctoral reviewing committee for the thesis defence of José Pagan Ortiz, PhD candidate at Universidad Politécnica de Madrid, School of Telecommunications Engineering with the thesis “Robust Modeling for Information Acquisition in Biophysical and Critical Scenarios” (2018), Advisors: Dr. José L. Ayala, Dr. José L. Risco Martin, Dr. José Manuel Moya Fernández
- Member of external reviewers board for the PhD thesis “Profile Monitoring of Multi-Stream Sensor Data” of Marco Luigi Giuseppe Grasso, PhD candidate at the Department of Mechanical Engineering, Energetics, Management and Transportation (DIME) Polytechnic School University of Genoa
- Member of the committee of the Qualifying Exam for candidate Andrea Bizzego in AY 2014-15 and for candidate Stefan Dragicevic in AY 2016-17, ICT Doctoral School University of Trento, DISI department.
- Member of the final review committee for the PhD thesis of candidate Francesco Gavino Brundu, Doctoral Program in Computer and Control Engineering, XXIX cycle, Doctoral School of Politecnico di

Torino (Thesis title: “Distributed service infrastructure for monitoring, management and simulation in Smart Cities”)

- Member of external reviewers board for 2 Ph.D. theses for *Università degli Studi di Urbino Carlo Bo*, Doctoral School in Science of Complexity (Dr. Malatini Silvia, XXIX cycle; Dr. Delpriori Saverio, XXX cycle)
- Member of external reviewers board for the Ph.D. thesis of Mattia Salvaro, DISI – University of Bologna, entitled “A fully-wearable non-invasive SSVEP-based BCI system enabled by AR techniques for daily use in real environment.” thesis supervisor Prof. Michela Milano.
- Opponent for the public defense of Mr Sanaul Haque’s Ph.D. thesis, University of Oulu, Finland. Prof. Timo Jämsä was the principal supervisor of the thesis, being a Professor in Medical Technology at the Research Unit of Medical Imaging, Physics and Technology, Faculty of Medicine

## RESEARCH PROJECTS

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### International projects:

- **IPCEI CIS** (Next Generation Cloud Infrastructure and Services) FBK budget: 14M€ Project start: May 2<sup>nd</sup>, 2024 Duration:5y Role: PI for the Digital Society center
- **IIMEO** (Instantaneous Infrastructure Monitoring by Earth Observation) Call: HORIZON.2.4 - Digital, Industry and Space · HORIZON · HORIZON.2.4.10 - Space, including Earth Observation · HORIZON.2.4 Period: 01.12.2022 – 30.11.2025 Budget 3,328,935€ Role: contributor
- **PATTERNS** (Planning a Digital Twin for Greener Road Infrastructure) Call: HORIZON-WIDERA-2023-ACCESS-04; Topic: HORIZON-WIDERA-2023-ACCESS-04-01; Type of Action: HORIZON-CSA Budget: 1 200 000.00 € Duration: 24M Period:01.05.2024 – 30.04.2026 Role: *associate key investigator, co-PI (E3DA team leader)*
- **Swarmchestrat**e (Application-level Swarm-based Orchestration Across the Cloud-to-Edge Continuum) Call: HORIZON-CL4-2023-DATA-01; Topic: HORIZON-CL4-2023-DATA-01-04; Type of Action: HORIZON-RIA; Period: 1.1.2024 – 31.12.2026; Budget: 4.328.726,25 EUR, PROJECT COORDINATOR: Hun-Ren Szamitastechnikai Es Automatizalasi Kutatointezet (Hungary) Role: *associate key investigator, co-PI (E3DA team leader)*
- **MIMEX** (Micro Market Experience) – Type: Fast Track to Innovation (FTI), Topic H2020-EIC-FTI-2018-2020, Innovation Action, duration 24 months, overall funding of about 2,2M€. Spindox Labs is the coordinator, FBK is one of the partners (funding about 590K€) with other 3 institutions. Role: *PI for FBK DigiS center and task leader*
- **MARVEL** – Project funded under the Call: H2020-ICT-2018-20 Topic: ICT-51-2020 Type of action: RIA, 17 partners, Duration: 36M, start: Jan 2021, Project budget: 6M€, FBK budget: 377500,00€ Role: *associate key investigator, co-PI (E3DA team leader)*
- **REPAIRS** (Relearning Perception Action In Rehabilitation from a Systems perspective) - MSCA-ITN-2020 - Innovative Training Networks – FBK is an associated partner. Role: *PI*
- **ProxyAware** – Project funded under the 2020 EIT Digital pilots COVID-19 tracing with physical tokens, Start: 1 July 2020. Coordinator: UNITN, Participants: 4; Duration 6 Months, FBK costs: 139.375,00, EIT Digital funding for FBK: 90.593,00 €. Role: *co-PI*
- **S2HOES** – Start: July 2020, Duration: 1 year. Project funded by AXA Foundation, Switzerland. Partner SUPSI, PedibusTicino, FBK. Role: *PI*
- **NeuroSoNew** – “Portable EEG-based screening of social predispositions in newborns” - ERC Proof of Concept Grant, Call reference: ERC-2018-PoC\_11-09-2018, Proposal number: 842243, Total funding 150K€, Duration 1 year (starting November 2019). Role: *PI*
- **CLIMB Ferrara** – funded by EIT KIC Climate – Later Stage Innovation Project call (EIT SGA 2018) – Duration: 1 year (from Sept 2018) – Total cost 62K€ (Total EIT funding 50K€). Role: *associate key investigator, co-PI (E3DA team leader)*
- **INNOWEEE** – funded by EIT KIC Climate – Later Stage Innovation Project call (EIT SGA 2018) – Duration: 3 years (from July 2018) - Total cost 2M€ (Total EIT funding 1,3M€). Role: *associate key investigator, co-PI (E3DA team leader)*
- **IoT Rapid Proto Labs** - Project Reference: 588386-EPP-1-2017-1-FI-EPPKA2-KA; EU Grant: 998989 EUR; Programme: Erasmus+; Key Action: Cooperation for innovation and the exchange of good

practice; Action Type: Knowledge Alliances for higher education, Duration: 3 years. *Role: PI and Country Manager.*

- E3DA is partner of UNITN in the activity 15490-17 | EIT Digital Professional School, Task: 15490-A1708 | Digitization of an existing course: "**Embedded hardware technologies for Internet of Things**", Task cost: 10k€ (EIT funding 75%). *Role: PI*
- **De kracht van het onbewuste leren 2.0 - The Power of Implicit Motor Learning 2.0**, funded under SIA RAAK PRO call 2014, Project duration: 4 years; Project start: Sept.2015. *Role: PI*
- **Improve** - "**A generic platform for movement training**", activity ID 15251 funded by EIT ICT Labs Action Line Health and Wellbeing (HWB) 2015. Start: January 2015; duration: 1 year; 5 partners, EIT Funding (€) 527,762.00 €, Total Catalyst Funding (€) 527,762.00 €, Carrier Funding (€) 2,117,490.00 €. *Role: Activity Leader and PI*
- **CuPiD** - *Closed-loop system for personalized and at-home rehabilitation of people with Parkinson's Disease* Funded under 7th FWP (Seventh Framework Programme), FP7-ICT-2011-7, Objective ICT-2011.5.1, duration 3 years, starting from October 2011. *Role: Proposal preparation, Co-Investigator (team leader for UNIBO EEES<sup>2</sup> lab)*
- **NIIT4CAD** - *New Interactive and Innovative Technologies for CAD*. Funded in the EUREKA's Eurostars programme (third Cut-Off 2009-2010) Web site: <http://eurostars.unibo.it/> *Role: Proposal preparation, Co-Investigator (team leader for UNIBO EEES<sup>2</sup> lab)*
- **CAMMI** - *Cognitive Adaptive Man-Machine Interface*. Funded under ARTEMIS (Advanced Research & Technology for Embedded Intelligence and Systems) sub-programme 8. Grant agreement no.: 100008 Start date: 05.12.2008 Duration: 36 months. Project cost: 7.315.506,00 Euro; Project Funding: 3204070,84 Euro. Web site: <http://www.cammi.eu/> *Role: Co-Investigator (team leader for UNIBO EEES<sup>2</sup> lab)*
- **SOFIA** - *Smart Objects For Intelligent Applications*. Funded under ARTEMIS-JU 2008 (Advanced Research & Technology for Embedded Intelligence and Systems) sub-programme 3. Grant agreement no.:100017. Start date: January 01 2009. Duration: 3 years. EU Funding: 6,10 M Euro *Role: Co-Investigator (team leader for UNIBO EEES<sup>2</sup> lab)*
- **SMILING** - *Self Mobility Improvement in the elderly by counteracting falls*. Funded under 7th FWP (Seventh Framework Programme). FP7-ICT-2007-1 Objective ICT-2007.7.1: ICT and Ageing. Start date: 01/01/2008; Duration: 30 months; Contract Type: Collaborative project; Project Reference: 215493; Project Cost: 2.868.050 euro; Project Funding: 2.250.000 euro. Web site: [www.smilingproject.eu](http://www.smilingproject.eu) [Link to CORDIS](#) Fact sheet. *Role: Co-Investigator (team leader for UNIBO EEES<sup>2</sup> lab)*
- **Sensation-AAL** - *SENsing and ACTION to support mobility in Ambient Assisted Living*. Funded under 6th FWP (Sixth Framework Programme). Action Line: IST-2005-2.6.2 Ambient Assisted Living (AAL) in the Ageing Society. Start date: 01/01/2007; Duration: 30 months; Contract Type: Specific Targeted Research Project; Project Reference: 045622; Project Cost: 3.040.000 euro; Project Funding: 2.000.000 euro. *Role: Proposal preparation, Co-Investigator (team leader for UNIBO EEES<sup>2</sup> lab)*

### National projects, agreements and industrial contracts:

- **AIxPA** L'intelligenza artificiale per la Pubblica Amministrazione Period: 01.06.2023 – 31.10.2025 Budget 2.981.443 € Role: contributor
- **V2X Locate** - Industrial contract with CRF- Stellantis Srl; Start date: Jul 2021; End date: Oct 2022 Role: main contractor.
- **AI@TN** ("Intelligenza artificiale a Trento") – PAT-funded project. Role: participant.
- **FAIR (Future Artificial Intelligence Research), spoke 2** – PNRR-funded project. Role: participant. Start date: Jan 2023
- **CitySensing flagship project** – FBK internal project. Role: WP leader for "City Sensing in the small"
- **Spinretail** – Project funded under PAT L.P. 6/1999. Project coordinator: Spindox Labs Srl. Research partner: FBK (units involved: E3DA, TEV). Funding: 270K€, Duration: 2 years. *Role: PI*
- **Make it PAYT!** – a project funded under PAT L.P. 6/1999. Project coordinator: Altares Srl. Research partner: FBK (E3DA and ICT4G units) Funding: 100K€, Duration: 2 years. *Role: co-PI (E3DA team leader)*
- **CLIMB** – Children's Independent Mobility Project. This project received funding from different sources (National and International) and has been deployed in several Italian areas: Trentino Alto Adige, Emilia

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<sup>2</sup> EEES Lab – Energy Efficient Embedded Systems research group led by Prof. Benini

Romagna, and Lecco. Connected international projects are CLIMB Ferrara and S2HOES. In 2016-2017 the project was funded by the Smart Community High Impact Initiative of the FBK ICT Center. In 2019 the project was selected among the **Proof of Concept** call, funded by FBK and was awarded 50K€. Furthermore, the project receives yearly funding from the Municipality of Trento, Cooperative Eco86 (Lecco), Unione della Romagna Faentina, ARPAE, Autonomous Province of Trento. The project received several awards. See [climb.fbk.eu](http://climb.fbk.eu). *Role: co-PI – leader for Pedibus.Smart* (<https://pedibussmart.fbk.eu/>)

- Partner in 2 projects funded by Fondazione Caritro – **DOMOSENS** and **SENSAT**. *Role: Participant*
- **Riablo Home** – project funded under PAT L.P. 6/1999. Project coordinator: Altares Srl. Research partner: FBK (E3DA). Duration: 18 months; Start date: 1 November 2014; Project cost: 688.400€; PAT funding: 498.885€ *Role: PI*
- Industrial contract - **collaboration activity with MotoriaLab Srl and Salewa SrL** (Oberalp Group) in the form of a consultancy contract for 15K€ plus royalties (2014). *Role: PI*
- Industrial contract - **collaboration activity with CoRehab Srl**, formalized in consultancy contract to E3DA unit @FBK in December 2014 for 13,3K€ (VAT excluded) *Role: PI*
- From 2010, supervision of the **collaboration activities with INAIL**<sup>3</sup> of Vigorso (Budrio, BO, IT), “Control board for articulated active hand prosthetics with embedded pattern recognition” on INAIL funding for 75K€;
- Scientific and research activity and coordination for the cooperation with companies involved in the **PERHL** project – PERvasive Health Lab – funded by Regione Emilia Romagna within the call “Dai distretti produttivi ai distretti tecnologici” DGR n. 1631/2009 – Duration 03/05/2010 - 02/11/2012 Coordinator: Gianpiero Camilli (NoemaLife)
- Funding for T3LAB activities - regional PRRIITT program for the Industrial Research, Innovation and Technological Transfer co-funded by Regione Emilia-Romagna (RER); measure 3.4B “Sviluppo di rete”; Action A – Laboratories for research and technological transfer; call published in November 26th, 2007 (DGR n. 1853/07). Project cost: 2.907.800€; Project funding (by RER): €1.304.820,00, Start date: 01/01/2009; duration: 18 months. *Role: Research team PI*
- Workpackage leader in **IT4CAD**<sup>4</sup> - Interactive Technologies for Innovative Subdivision-supported Computer-Aided Design Systems – a project funded as a Strategic Project of the University of Bologna (*Progetto strategico di Ateneo*). Project start: July 2007 Project duration: 2 years; Project cost: 150.000 Euro Project Funding: 75000 Euro.
- Scientific team coordinator for **Casattenta**; project funded by T3LAB and Fondazione Carisbo; start date: 01/03/2009, duration: 2 years, project cost: 301.250€; project funding (by Fondazione Carisbo): 201.250€
- Funding for T3LAB activities - Scientific team coordinator for sub-area on Wireless Sensor Networks, Program: PRRIITT - Regional Program for Industrial Research, Innovation and Technological Transfer; start date: 01/01/2006, end date: 31/12/2007. *Role: Research team PI*
- Team leader and concept designer for Micrel Lab<sup>5</sup> in TANGerINE project, a cooperation between EEES lab and MICC Lab (University of Firenze) – 2007-2009.
- *Dec 04 – Dec 06* Main scientist and activity coordinator in the **SUMMIT** project (Servizi Ubiquitari MultiMediali per l'Innovazione tecnologica e Telematica. - Ubiquitous Multimedia Services for *Technology and Telematic Innovation*) co-funded by Regione Emilia-Romagna, duration: 2 years. Project Cost: 2.470.000 euro; Project Funding: 988.000 €.
- *Nov 04 – Nov 06* Main scientist and activity coordinator for DEIS in the **LAICA** project (Laboratorio di Ambient Intelligence per una Città Amica – *Ambient Intelligence Laboratori for a Friendly City*), co-funded by Regione Emilia Romagna; duration: 2 years; partners involved: Reggio Emilia Municipalità, University of Modena and Reggio Emilia, University of Parma, WTI, Regulus, AGACTEL, OT Consulting, Sirti. Project Cost: 2.076.827,11 Euro Project Funding: € 731.724,13
- In 2004 research project funded by Hewlett Packard Italy with 30000 Euro in equipment. *Role: main researcher*
- June 2001 Principal scientist for a 1-year project on a mobile interface for immersive virtual environments at CINECA in cooperation with Hewlett Packard. Funded by Regione Emilia Romagna – Spinner office. Project budget: 18000 Euro. *Role: proposal preparation, main scientist and PI*

<sup>3</sup> Inail, the National Institute for Insurance against Accidents at Work, is a public Italian non-profit entity supervised by the Italian Ministry of Labor and Social Affairs.

<sup>4</sup> <http://it4cad.dm.unibo.it/>

<sup>5</sup> Micrel Lab, Microelectronics Labs led by Prof. Riccò

## TEACHING ACTIVITY, COURSES AND SEMINARS

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From 2002, I continuously carried out a significant teaching activity in support of various courses of the **Faculty of Engineering at the University of Bologna**, with content in digital electronics, microprocessor architectures, and design methodologies. This activity is described below.

- Adjunct Professor for the School of Engineering and Architecture at the University of Bologna, course of *Electronic Industrial Systems Architecture and Programming Laboratory T-A* A.Y. 2014-2015 and A.Y. 2015-2016, Degree Programme in Electronics and Telecommunications Engineering.
- Assistance for courses in *Electronics LB*, *Digital Electronic Circuits LA*, and *Electronics T1* (Bachelor level), dedicated to the fundamentals of digital CMOS circuits. Within these courses, I have carried out practical activities for students, classroom support, student assistance, support to the preparation and verification of examinations, and preparation and supervision of projects and laboratory activities. In addition, I supervised thesis work carried out within these courses. In particular, for the course *Electronics LB* in A.Y. 2002/2003, for the course *Electronic Circuits LA* in A.Y. 2008/2009, and for the course *Electronics T1* from A.Ys. 2010/2011, 2011/2012, 2012/2013 I have been an adjunct professor for teaching support.
- From A.Y. 2004-05 to 2015, I worked as a teaching assistant for the course in Hardware-Software Design Methodologies (Degree, and now Master), for which I contributed with discussions and seminars on topics related to advanced design of embedded systems. I also contribute to supervising the student examination project and laboratory activities, which in many cases develop in the subsequent thesis.
- From A.Y. 2004-05, I worked as a teaching assistant for the *Microprocessor-based Systems LS* (Degree, and now Master) course, which provides an overview of the design and development of embedded systems. For this course, I organized seminars on advanced technologies, applications of interest, case studies, and examples of technology transfer. I also contributed to the supervision of dissertations and examination projects carried out in the laboratory.
- Supervisor or co-advisor of more than 50 master's and 60 bachelor's theses in electrical and computer engineering since 2002. Main topics: human-computer interaction (HCI), wireless sensor networks, ambient intelligence, gesture interfaces, natural interaction devices, body area networks, and personal healthcare.
- In 2003 and the following years, I taught a module on "Wireless Sensor Networks enabling Ambient Intelligence and Immersive Virtual Reality" at the CINECA *Summer School on Scientific Visualization and 3D Interactive Computer Graphics*.
- Since 2005, yearly seminar on Ambient Intelligence technologies in Master on Innovation Technologies organized by the University of Bologna
- Spring 2019, teaching the course "Embedded system design for wearable applications" at the doctoral School in Information and Communication Technologies of the University of Trento

## RESEARCH PERIODS IN OTHER INSTITUTES

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- Visiting researcher in the Palpable Machine Group at Media Lab Europe in Dublin (2004)
- Visiting researcher in the Integrated System Centre at EPFL, Lausanne (2007)
- Visiting researcher in the Wearable Computing group – ETH Zurich (2008)

## SERVICE

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### International conference and journal committees

- Member of the editorial board of Elsevier *Sustainable Computing: Informatics and Systems* (SUSCOM) journal
- Member of the editorial board for MDPI *Sensors*
- Member of the Editorial Board of the *International Journal of Computer Aided Engineering and Technology* (IJCAET), Inderscience Publishers from 2008.
- Member of the Editorial Board of the EURASIP Journal on Advances in Signal Processing
- Special Sessions Chair at IEEE Sensors Applications Symposium 2021 and 2022
- Member of the Technical Program Committee (TPC) of the *International Conference on the Digital Society* (ICDS), 2008 and 2009.

- Member of the TPC of the *International Conference on Pervasive Computing Technologies for Healthcare* (Pervasive Health) - from 2008
- Member of the TPC of the *European Conference on Smart Sensing and Context* (EuroSSC) from 2008.
- Member of the TPC of the *International Conference on Advances in Mesh Networks* (MESH) in 2008.
- Member of the TPC of the *Conference on Advances in Computer-Human Interaction* (ACHI) from 2008 (in 2009 e 2010).
- Member of the TPC of the *International Conference on eHealth, Telemedicine, and Social Medicine* (e-TELEMED) from 2008 (2009 e 2010).
- Member of the TPC of the *e-Health International Conference* (eH) - IADIS (International Association for Development of the Information Society) from 2008 (2009, 2010, 2011).
- Member of the PC of the 4th ICST International Conference on eHealth 2011
- Session Chair, *Advanced Industrial Conference on Wireless Technologies*, a Montreal (IEEE), Canada (track SENET on SENSor NETWORKS, session: Architectures).
- Member of the TPC *Networks in Euromicro Conference on Digital System Design* (DSD) 2011 (*special session on Wireless Sensor*), 2012, 2013
- Member of the TPC of Workshop on Smart Environments and Ambient Intelligence from 2011 (SenAmi 2011 & 2012)
- Co-chair of the the 5th International Workshop on Smart Environments and Ambient Intelligence 2013 (SenAmi 2013)
- Guest Editor of Special Issue on Interaction in Augmented Smart Environments International Journal of Distributed Sensor Networks (Hindawi)
- Guest Editor of Journal of Ambient Intelligence and Humanized Computing - Special Issue on Personalization and Situation Awareness in Smart Environments, Springer (ISSN 1868-5145)
- Guest Editor for MDPI Sensor Journal for the Special Issue "Towards Pervasive Health-Centric Care Systems: Empowering Patients and Citizens Through Sensors and Collaboration Technologies
- Member of the TPC of HASCA 2013, HASCA 2014, HASCA 2015 and HASCA 2016, HASCA 2020, International Workshop for Human Activity Sensing Corpus and its Application. Member of the TPC of ASGA 2014 and ASGA4Health 2015. Both workshops are held in conjunction with Ubicomp and ISWC (2013 in Zurich, CH; 2014 in Seattle, USA, 2015 in Osaka, Japan; 2016 in Heidelberg, Germany).
- Member of the TPC of DATE 2013, DATE 2017 and DATE 2021- Application track on Ambient Intelligence and Ultra-Low Power Systems for Healthcare and Wellness, renamed Augmented Living and Personalized Healthcare
- Topic co-chair for DATE 2014 and DATE 2015 – topic A4 Application track on Ambient Intelligence and Ultra-Low Power Systems for Healthcare and Wellness
- Topic Chair for DATE 2016 and DATE 2018 – topic A4 Application track on Ambient Intelligence and Ultra-Low Power Systems for Healthcare and Wellness
- Program Committee of BIODEVICES in 2014, 2015, 2016 and 2017 - International Conference on Biomedical Electronics and Devices
- Chair for the "Smart Environment" track of the 2nd International Conference on the Future Internet of Things and Cloud (FiCloud 2014) held in conjunction with the 11th International Conference on Mobile Web Information Systems (MobiWIS 2014), Barcelona, Spain, August/September 2014
- Member of the TPC of Wireless Health 2014 International Conference
- Co-organizer of Workshop on Wearable Body Sensor Networks for Motor and Cognitive Rehabilitation at BSN 2014 International Conference, Zurich, CH.
- In TPC of 2nd International Forum on Research and Technologies for Society and Industry (RTSI 2016)
- In TPC of IEEE Consumer Communications & Networking Conference (CCNC) in 2016 and 2017
- In TPC of 2016 IEEE Cyber Science and Technology Congress (CyberSciTech 2016)
- In TPC of 2nd International Conference on Internet of Things, Big Data and Security (IoTBDS 2017)
- In TPC of IEEE Workshop on Internet of Energy Neutral Things (IoENT 2017)
- In TPC of IEEE International Workshop on Advances in Sensors and Interfaces, 2019

### Reviewer for International Conferences and Journals:

I'm reviewer for International conferences and journal I'm not in the TPC for. Examples hereafter.



**Conferences:** *International Conference on Pervasive Computing Technologies for Healthcare* (Pervasive Health) - (co-sponsored by ACM SIGCHI e IEEE EMB) from the second edition onwards (2008, 2009, 2010); *ACM International Conference on Human Factors* from 2008; ACM SIGCHI (Special Interest Group on Computer Human Interaction) conferences, such as EICS (*ACM SIGCHI Symposium on Engineering Interactive Computing Systems*), DIS (*ACM SIGCHI Conference on Designing Interactive Systems*), MobileHCI (*International Conference on Human-Computer Interaction with Mobile Devices and Services*); ICC04: *IEEE International Conference on Communications* (2004); CCNC 2004 and 2017: *First IEEE Consumer Communications and Networking Conference* (2004); ISCC 2004: *IEEE Symposium on Computers and Communications* (2004); VSSN05: *International Multimedia Conference, 3rd ACM international workshop on Video surveillance & sensor networks* (2005); VSSN06: *International Multimedia Conference, 4th ACM international workshop on Video surveillance and sensor networks* (2006); PerCom 2006: *Fourth International Conference on Pervasive Computing and Communications* sponsored by IEEE Society (2006); ICC08: *IEEE International Conference on Communications* (2008); EUSIPCO2008: *European Conference on Signal Processing* (2008); TEI 2011: *Fifth International Conference on Tangible, Embedded, and Embodied Interaction* (2011); IWASI 2011: 4<sup>th</sup> *IEEE International Workshop on Advances in Sensors and Interfaces*; ISWC 2013: *The International Symposium on Wearable Computers* (ISWC), 2013; *IEEE Engineering in Medicine and Biology Society (EMBC) International Conference* in 2015, 2016, 2017; 14th *International Conference on Smart Homes and Health Telematics*, ICOST 2016, “*Inclusive Smart Cities and Digital Health*”; *IEEE Second International Smart Cities Conference (ISC2)*, 2016, *Special session on Low-power wireless networks and sensors for smart cities*; 13th *International Wireless Communications and Mobile Computing Conference (IWCMC 2017)*

**Journals:** *ACM/Springer Mobile Networks and Applications* (MONET); *Microelectronics Journal*, Elsevier; *Pervasive and Mobile Computing*, Elsevier; *ACM Transactions on Sensor Networks* (TOSN); Elsevier *Computer Communications*; *The IEEE Transactions on Information Technology in Biomedicine* (TITB); *ACM Transactions in Embedded Computing Systems* (TECS); *IEEE Journal on Selected Areas in Communications* (J-SAC); *IEEE Sensors Journal*; *IEEE Computer*; *IEEE Pervasive Computing*; *Journal of Universal Computer Science*; *ASP Journal of Low Power Electronics* (JOLPE); Elsevier *Automation in Construction Journal*; *IEEE Journal of Biomedical and Health Informatics*; *IEEE Transactions on Biomedical Circuits and Systems*

## TECHNOLOGY TRANSFER ACTIVITY, CONSULTANCY, INDUSTRIAL COOPERATION, NETWORKING E BROKERAGE

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### Patents

JJP De Gyvez, H Fatemi, M Rusci, L Benini, E Farella, D Rossi “Event-Based Power Manager”, US Patent App. 15/813,861; Publication date: 16.05.2019; Grant Number: 10732698, Grant Date: 04.08.2020; Publication Kind: B2; [PermaLink](#)

### Technology transfer (other than consultancy contract) and networking

- The “wireless smart glove” developed under my supervision has been exploited commercially, thanks to the cooperation with **DGTech** Engineering Solutions, and it is at present sold and distributed under the name DG5 VHand 3<sup>6</sup>.
- Consultancy activity for Engines Engineering SpA in cooperation with the Institute of Design of the Politecnico of Milan, relatively the design, implementation and use of movement-based interfaces and mobile devices for interaction in “virtual rooms”.
- From cooperation with **CINECA** and with **Politecnico of Milan**, it has been developed an Immersive Virtual Environments navigation system, based on inertial sensors and a handheld device, at present used in both institutes. Moreover, the system has been demonstrated in dissemination events targeting experts and industries, such as the SGI VIZ SUMMIT 2002 in Genova (23-25 October 2002) and the Futureshow in Bologna (2002).
- From 2007 scientific coordinator of the research cooperation with STMicroelectronics, in the domain of test and implementation of STM-MEMS sensor-based applications. In particular, within this cooperation, I contributed to the specifications, design and implementation of a wireless module based on low-power

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<sup>6</sup> <http://www.dg-tech.it/vhand3/>

components, equipped with a tri-axial accelerometer, a Zigbee-compliant transceiver and its protocol stack. From that prototype, STMicroelectronics developed the **MotionBee**.

- One of the research teams at T3LAB working under my supervision contributed to developing the specification, the design and the prototypes for the Zigbee modules, engineered by **Aurel SpA**.
- Within the cooperation established in the **LAICA ER** project, a further consultancy was continued with Sirti SpA regarding the integration of wireless sensor networks and wireless standard protocols in their products.

### Networking events participation and project demonstration

- Organizer of the Climathon 2019 event in Rovereto, 25-26 Ottobre 2019
- Presenter of the CLIMB solution and demonstration at Climathon Ferrara 2018; at the Trento Smart City Week 2018; at the Night of Researchers 2019 (Trento).
- Participation and demonstration of the WeeeRRobots solution (Project Innoveee) at the Trento Smart City Week 2019 and at the Rovereto Green Night 2019
- Since 2005, participation and research results demonstration at *Research to Business*, an annual exhibition organized by Aster and Regione Emilia Romagna.
- Participation in the events organized by the European Commission to present funding programmes, and facilitate networking and brokerage. In particular: IST 2006 (21-23 November 2006, Helsinki, Finland), 2nd Concertation Workshop of EC funded activities and consultation on future R&D challenges and opportunities (3-4 March 2008, Brussels, Belgium), ICT 2008 (25-27 November 2008, Lyon), “Digital Preservation and Access to Cultural Resources: ICT Call 9 Information Day” (15 November 2011 in Luxemburg), ICT 2013 event “Create, Connect, Grow” (Vilnius, Lithuania 6-8 November 2013), ICT Proposers' Day 2014 (9-10 October 2014, Florence, Italy), ICT 2015 “Innovate, Connect, Transform” (20-22 October 2015, Lisbon, Portugal). These events were the occasion to disseminate scientific results from a European project I was involved in, to create new cooperation both with research centers and companies, and to keep updated on funding possibilities and calls.
- Participation in networking events organized by CREATE-NET, e.g. *Workshop - FP7 1st Call Networking Session* – 16-17 December 2006, Trento.
- Participation to FORITAAL - *Forum Italiano per l'Ambient Assisted Living* in Lecce, 9-11 September 2009.
- Participation in WESH 2009, *ArtistDesign Workshop on Embedded Systems in Healthcare* 2009 and the *ESI Symposium* 2009, in Eindhoven, Netherlands.
- Participation in the Second ARTEMIS Technology Conference, 12-13 Sept. 2011, held at the University of Bologna, Italy
- Presentation at Fortronic, exhibition events for the electronics companies, of results in the field of smart sensors. In particular, in 2003 and in 2005, participation in the workshop organized by ASSIPE and awarded within the *Design-In Award* context.
- The group of 3 researchers on RFID technologies, which I supervised at T3lab, participated with several demonstrators or as a speaker to several dissemination events and exhibitions. Some examples are RFID Italia Award in Varese (2009), *The night of the researchers* in Bologna (2009), TRACE-ID in Parma (2009), QUID in Milan (2009), "HCI for the next future" and "Le sorgenti dell'Innovazione" workshops at T3LAB in 2009 and 2010, Global Logistics, Bentivoglio (BO) (2010), M2M, Milan (2010), BIP Research in Milan, Exposanità in Bologna (2010). In these events, my role was to supervise the contributions of researchers and coordinate the activities.
- The group on wireless sensor network and the Casattenta group I supervised at T3lab participated in several events, demonstrating the concept and showcasing the Casattenta system. Some examples are: FORITAAL - Italian AAL Forum 2009 in Lecce, The European Ambient Assisted Living Forum 2009 in Wien, Domus Persona in Trieste in April 2010, M2M Forum in 2007 and 2010 in Milan, BIP Research 2010 in May 2010 in Milan, “Domotica e Disabilità” and Exposanità in May 2010 in Bologna, The European Ambient Assisted Living Forum 2010 in Denmark and FORITAAL - Italian AAL Forum in Trento respectively in September and October 2010, Handimatica in November 2010. CASATTENTA project was presented on the local broadcaster éTV. In these events, my role was to supervise the contributions of researchers and coordinate the activities.
- Results dissemination of the **TANGerINE project** with the Micc lab of Prof. Del Bimbo (University of Florence) to the general public in several events such as the 28th October 2007, inside the SWITCH area of the “Festival della Creatività” in Florence, the first interactive long-form improvisation

performance TANGerINE theatre was presented; the 29th August 2007 the TANGerINE project was presented as part of VIDIFACE at the exhibition Campus Party 2007 in Valencia (area Campus Futuro); in May 2008, TANGerINE Theatre presented at Box Festival, Teatro Vascello, Roma, in June 2009, TANGerINE Cities presented at *Frontiers of Interaction* in Firenze.

## TRAINING EXPERIENCES AND ADDITIONAL INTERNATIONAL EXPERIENCE

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- In 2001, Computer Graphics Summer School at CINECA (BO)
- In 2001, Course on Geographical Information Systems (GIS) by ESRI Italia at CINECA
- In 2001, National Doctoral School in Electronics Engineering organized by GE – Catania 2001
- 4-9 November 2002, National Doctoral School in Informatics Engineering organized by GII - Volterra
- August 29 - September 3, 2005, *Summer School on Wireless Sensor Networks and Smart Objects*, Schloss Dagstuhl, Germany
- July 30 to August 03 2007, *Pervasive Healthcare Systems Summer School*, Kloster Seeon, Germany
- October 2006, Course organized by ARIC (University of Bologna) and Hyperion Ltd. on “*How to write a Competitive Proposal for Framework 7*” and “*Getting ready for Framework Programme 7*”.
- 3-6 Sett. 2008, *5th International Posture symposium*, Smolenice Castle, Slovakia.
- In 2014 Leadership training course organized by FBK

## AWARDS

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- In 2002, **Award from C.N.A.** (National Confederation for arts and crafts and little and medium enterprises – [www.bo.cna.it](http://www.bo.cna.it)) for the “Laurea” thesis: *Speech Enhancement in Noisy Environment for Handheld Devices*
- In 2003, **Award from C.N.A.** for the thesis I supervised based on the research project “Interaction and Cooperation in Immersive Virtual environment through Wireless PDA”, in cooperation with CINECA and the University of Bologna.
- In April 2003, Winner of the second prize for the **Design-In Award 2003**, organized by ASSIPE (Italian Association for Electronics Design), with “MOCA Project: MOtion Capture with Accelerometers”.
- In 2004, Research Project on mobile devices and ambient intelligence, **awarded by Hewlett Packard Italy** with 30K Euro in equipment
- In April 21st, 2005, Winner of the first prize for the **Design-In Award 2005**, organized by ASSIPE (Italian Association for Electronics Design), with “Bio-WWS Project - Bio-feedback Wireless Wearable System”
- In 2008, **Best Paper Award** at EWSN08 - the 5<sup>th</sup> European Conference on Wireless Sensor Networks -. for the paper Zappi et al. “Activity recognition from on-body sensors: accuracy-power trade-off by dynamic sensor selection”, Bologna, Italy, Jan 30-Feb 1.
- For the results of the FP7 project CuPiD, our team received several awards: MIT Innovators under 35 Award, MobileMed Conference 2014 1st place - **Gold Award e Audience Award, Wired Audi Innovation Award**
- In 2019, **Honorable mention** at the 2019 ACM Conference on Human Factors in Computing Systems (CHI'19), Glasgow, UK, May 4-9, 2019, for the paper M. Ferron et al. “A walk on the child side: Investigating parents’ and children’s experience and perspective on mobile technology for outdoor child independent mobility”.
- For the results obtained from the CLIMB project ,our team received several awards: 2019 **Premio Mobilità 2019** (Settimana della bioarchitettura a Modena); 2018 **Wind-TRE Award** – Advanced roads, in 2018 – **Sustainable PA Award** Forum PA Challenge; in 2018 – **EIT Climate KIC Urban Challenge** Ferrara; in 2017 – **G7ALLERY** – G7 Trasporti, Cagliari, in 2016 – **First prize for Virtuous Municipalities for sustainable mobility**
- In 2021, **Best Poster Award** by CIMEC PhD program to my student Velu Kumaravel
- In 2020, **Best demo Award** at the International Workshop on the Internet of Sounds at the 27<sup>th</sup> FRUCT Conference, September 7-8, 2020, Trento, Italy
- In 2022, **Best demo Award** at the GTII Winter School, in Bardonecchia.

- In 2022, the research performed by my student Velu Kumaravel was awarded among the 3 best ones in the CIMEC PhD program
- In 2022, my student Velu Kumaravel won the **Think Open @ CIMEC Award 2022** for the research performed in his PhD.

## PARTECIPATION AS A PRESENTER OR INVITED SPEAKER IN NATIONAL AND INTERNATIONAL EVENTS

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1. International Conference EUROMEDIA2002, Democenter, Modena, Italy, 15-17 April 2002
2. Eurographics Italian Chapter Annual Conference, Milano Italy, July 2002.
3. 4-9 November 2002, presentation on PhD research activity at “Scuola di dottorato nazionale in Ingegneria Informatica” organized by Gruppo Ingegneria Informatica (GII) in Volterra
4. Presentation “Palmtop computer for Interaction in Immersive Virtual Heritage” at SGI VIZ SUMMIT 02 in Genova (23 - 25 October 2002)
5. Demonstration of interaction through a handheld device with immersive virtual reality at FutureShow 2002, within the workshop “La Realtà Virtuale nella Ricerca Scientifica” in the area reserved for CINECA.
6. Presentation related to the scientific results of the innig projects at the Design-In Award in 2003 (II prize) and in 2005 (I prize) at Fortronic, an event organized by Assodel-Tecnoimprese.
7. International Conference EUROMEDIA2003, Plymouth, UK, 14-16 Aprile 2003
8. First IEEE Consumer Communications and Networking Conference, CCNC 2004, 5-8 January 2004, Las Vegas
9. 3rd ACM International Workshop on Video Surveillance & Sensor Networks, VSSN05, 11 November 2005, Singapore
10. International Conference on Systems Communications, 2005, (ICW / ICHSN / ICMCS / SENET 2005), IEEE Computer Society, 14-17 August 2005, Montreal, Canada
11. Summer School on Wireless Sensor Networks and Smart Objects, August 29 - September 3, 2005, Schloss Dagstuhl, Germany, “Design and Implementation of WiMoCA Node for a Body Area Wireless Sensor Network” in Workshop Contributions
12. International Conference EUROMEDIA2005, Toulouse, Francia, 11-13 April 2005
13. Seminar at the ISTI – the University of Urbino on “Natural User Interfaces for Ambient Intelligence Applications”.
14. Since 2005, annual participation in Research to Business (exhibition organized by Aster and Regione Emilia Romagna) with demonstrators and presentations in related workshops. In particular, **invited talk** in “Tracciare la sicurezza” workshop, for the Rete Alta Tecnologia Emilia Romagna, 13 November 2009.
15. 11th IEEE Symposium on Computers and Communications, ISCC '06, 26-29 June 2006, Pula-Cagliari, Italy
16. 3rd European Workshop on Wireless Sensor Networks, EWSN 06, Zurich – CH, 13-15 February 2006.
17. 4th Intl. Conference on Pervasive Computing, PERVASIVE 2006, Dublin, Ireland, 7-10 May 2006
18. Fourth Annual IEEE International Conference on Pervasive Computing and Communications, 2006, PerCom Workshops 2006, 13-17 March 2006
19. **Invited Talk**, “Casattenta” at M2M Forum in Milan, Casatech 2007 Workshop, 22-23 May 2007
20. 16° International Conference in Central Europe on Computer Graphics, Visualization and Computer Vision'2008 (WSCG 2008), University of West Bohemia, Campus Bory, Plzen - Bory, Czech Republic, 4-7 February 2008
21. 6th Conference of the International Society for Gerontechnology, ISG08, Pisa, 4-7 June 2008
22. ACM SIGGRAPH 2008, Los Angeles, California, 11 – 15 August 2008
23. 3rd European Conference on Smart Sensing and Context, EuroSSC08, Zurich, Switzerland, 29-31 October 2008
24. **Invited demonstration** at 5th International Posture symposium, Smolenice Castle, Slovacchia, “Practical demonstration of the output in Sensation-AAL project with PD patient”, 3-6 September 2008
25. Foritaal 2009, FORITAAL – Italian Forum for the Ambient Assisted Living, Lecce, Italy, 10–11 September 2009
26. “Awareness in smart environment: the “Casattenta” Project”, **Invited talk**, Advances in sensors and Interfaces, 2009, IWASI 2009, 3rd International Workshop on, 25-26 June 2009, Trani (Bari), Italy.
27. **Invited talk** “Sensing and Actuating in Assistive Environments” at WESH 2009 - ArtistDesign Workshop on Embedded Systems in Healthcare 2009, within the ESI Symposium 2009, 7 December 2009, Eindhoven - The Netherlands.

28. Co-presenter of the two posters “A body area network with vibrotactile actuation” and “Wearable system for foot kinematics and pressure measurements during gait” in 19th Conference of the International Society for Posture and Gait Research, ISPGR 2009, 21-25 June 2009, Bologna – Italy.
29. From 2005 to 2010, speaker in seminars for the companies, organized by T3LAB (e.g. 16 September 2005, speaker in the workshop “Wireless sensor networks and ambient intelligence”; 27 February 2007, presentation of research results on “Wireless sensor networks and ambient intelligence: indoor tracking” within the workshop “Luoghi e idee per l’innovazione”; 30 June 2009 seminar on "HCI for the next future")
30. ICT event 2010, Bruxelles, 27-29 September 2010, co-presenter of the demonstrator of the FP7 EU SMILING project, selected by the European Commission.
31. **Invited talk** at 3rd International Workshop on Sensor Networks and Ambient Intelligence (SeNAml 2010), a joint workshop with the IEEE/IFIP EUC 2010 (International Conferences on Embedded and Ubiquitous Computing - EUC) in Hong Kong SAR, Cina, 11-13 December 2010.
32. International Joint Conference on Biomedical Engineering Systems and Technologies 2010, HEALTHINF 2010 track, 26-29 January 2010, Roma, Italy
33. Presentation on “Body sensor/actuator networks for healthcare and rehabilitation: ICT for a sustainable Health” at the **workshop on invitation** “The Internet of Things for a Sustainable Future”, 9-13 May 2011 in Vielsalm (BE).
34. IWASI 2011 - 4th IEEE International Workshop on Advances in Sensors and Interfaces - 28-29 June 2011 - Borgo Egnazia, Savelletri di Fasano, Brindisi, Italy.
35. Second ARTEMIS Technology Conference, 12-13 Sept. 2011, held at the University of Bologna, Italy
36. **Invited speaker** at B-Aware 2011 Summer Doctoral School, June 20-24, 2011, EPFL, Lausanne
37. **Invited speaker** at ASP-DAC 2012 Tutorial on Wireless Body Sensor Network (WBSN) Design, January 30<sup>th</sup>, 2012, Sydney
38. **Invited presentation** at FBK, December 2012, Trento on Smart objects & Wearable sensors for Pervasive Healthcare and HCI
39. **Invited lecture** on Wearable sensors for energy expenditure at Webvalley 2014 - International Summer School in San Lorenzo in Banale, Trentino, June 22 – July 12, 2014
40. **Invited speaker** at ISA Topic 2014 - *Per una vita quotidiana Smart*, 10 November 2014, Bologna organized by Istituto Studi Avanzati, Alma Mater Studiorum Bologna.
41. **Invited presenter** at Special Day on Wearable Electronics and Smart Medical Devices at DATE 2017, the session on HW and SW design constraints in medical devices.
42. **Keynote speaker** at IEEE Computer Society Annual Symposium on VLSI Aliathon Resort, Pafos, Cyprus, July 4-6, 2022, ISVLSI2022, with the talk “TinyML for tiny embedded systems”
43. **Selected speaker** at tinyML EMEA Innovation Forum 2022, October 10-12, 2022, Limassol, Cyprus, with the presentation “Bringing face-swapping to the very edge with Phinets”
44. **Keynote speaker** at 14th International Symposium on Communication Systems, Networks and Digital Signal Processing - CSNDSP 2024, Rome (Keynote title: “Tiny machine learning for resource-efficient networked embedded systems”), 17÷19 July 2024
45. **Keynote speaker** at Eyes Of The Future: Integrating Computer Vision In Smart Eyewear (ICVSE) Workshop at ECCV2024, September 29<sup>th</sup>, 2024, Milan (Keynote title: “Hardware-Aware Scaling in tinyML: Enabling Optimized Neural Networks for Smart Eyewear and Beyond”)
46. **Keynote speaker** at Green FOundation MOdels (GreenFOMO) Workshop at ECCV2024, September 30<sup>th</sup>, 2024, Milan (Keynote title: “Unlocking the potential of Foundation Models in tinyML”)
47. **Invited speaker** in FBK Workshop “AI at the Edge and Sensors”, October 29<sup>th</sup>, 2024 – seminar title: “Tiny AI for resource-efficient networked embedded systems”
48. **Invited speaker** in FBK Workshop “AI and Energy”, February 28<sup>th</sup>, 2025 – seminar title: “AI in Tiny Devices - An Energy Efficiency Challenge”

## REFEREES

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- **Professor Luca Benini**, Integrated Systems Laboratory - Swiss Federal Institute of Technology in Zurich ETHZ ETZ J84, Gloriastr. 35, 8092 Zurich, Switzerland Ph +41 44 632 6664 and DEI – University of Bologna, v.le Risorgimento 2, 40136 - Bologna, Italy; Ph. +390512093782 - E-mail: [lbenini@iis.ee.ethz.ch](mailto:lbenini@iis.ee.ethz.ch) or [luca.benini@unibo.it](mailto:luca.benini@unibo.it)
- **Dr. Marco Pistore**, Director of the Digital Society Center, Fondazione Bruno Kessler, Via Sommarive 18, 38123, Povo (TN), Italy; Ph. +39 0461 314327 - E-mail: [pistore@fbk.eu](mailto:pistore@fbk.eu)

## SCIENTIFIC PUBLICATION LIST (REVERSE CHRONOLOGICAL ORDER)

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2025

- [1] Manuel Barusco, Francesco Borsatti, Davide Dalle Pezze, Francesco Paissan, Elisabetta Farella and Gian Antonio Susto "PaSTe: Improving the Efficiency of Visual Anomaly Detection at the Edge" accepted at CVPR 2025 Workshop

2024

- [2] Francesco Pasti, Marina Cecon, Davide Dalle Pezze, Francesco Paissan, Elisabetta Farella, Gian Antonio Susto, Nicola Bellotto, "Latent Distillation for Continual Object Detection at the Edge", 2024 Computational Aspects of Deep Learning Workshop @ ECCV
- [3] Stefano Ciapponi, Francesco Paissan, Alberto Ancilotto, Elisabetta Farella "TinyVocos: Neural Vocoder for MCUs," 2024 IEEE 5th International Symposium on the Internet of Sounds (IS2), Erlangen, Germany, 2024, pp. 1-10, doi: 10.1109/IS262782.2024.10704173.
- [4] A. Alessandro Bonfiglio, Elisabetta Farella and Raoul M. Bongers, "Accuracy and Reliability of a Novel IMU-Based Functional Calibration Algorithm for Clinical 3D Wrist Joint Angle Monitoring," in 2024 IEEE International Conference on Omni-layer Intelligent Systems (COINS), London, United Kingdom, 2024 pp. 1-6., doi: 10.1109/COINS61597.2024.10622124
- [5] Alessandro Bonfiglio, Cecilia Petrucelli, Giacomo Villa, Raoul M. Bongers, Elisabetta Farella "Preliminary Validation of an IMU-based Physiotherapy Assessment System for the Lower Extremities" EAI PervasiveHealth 2024
- [6] Francesco Paissan, Elisabetta Farella, "tinyCLAP: distilling contrastive language-audio pretrained models", Proc. Interspeech 2024, 1685-1689, doi: 10.21437/Interspeech.2024-193
- [7] Francesco Paissan, Davide Nadalini, Manuele Rusci, Alberto Ancilotto, Francesco Conti, Luca Benini, Elisabetta Farella, "Structured Sparse Back-propagation for Lightweight On-Device Continual Learning on Microcontroller Units", in 2024 IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (CVPRW), Seattle, WA, USA, 2024 pp. 2172-2181.; DOI: <https://doi.ieeecomputersociety.org/10.1109/CVPRW63382.2024.00222>
- [8] Alessandro Bonfiglio, David Tacconi, Raoul M. Bongers and Elisabetta Farella, "Effects of IMU sensor-to-segment Calibration on Clinical 3D Elbow Joint Angles Estimation", Frontiers in Bioengineering and Biotechnology Biomechanics, Vol:12, 2024, DOI=10.3389/fbioe.2024.1385750
- [9] Francesco Paissan, Michela Lecca, Roberto Passerone, Elisabetta Farella, Massimo Gottardi "A High-Dynamic Range Vision Sensor with Neuro-Memristive Skin Detection for Edge Computing", J. Opt. Soc. Am. A 41, 1009-1018 (2024), <https://doi.org/10.1364/JOSAA.516912>
- [10] Alberto Ancilotto, Francesco Paissan and Elisabetta Farella, "XiNet-pose: Extremely lightweight pose detection for microcontrollers", 2024 Design, Automation & Test in Europe Conference & Exhibition (DATE), Valencia, Spain, 2024, pp. 1-6, doi: 10.23919/DATE58400.2024.10546821.
- [11] Matteo Tremonti, Davide Dalle Pezze; Francesco Paissan, Elisabetta Farella; Gian Antonio Susto "An empirical evaluation of tinyML architectures for Class-Incremental Continual Learning", 2024 IEEE International Conference on Pervasive Computing and Communications Workshops and other Affiliated Events (PerCom Workshops), Biarritz, France, 2024, pp. 690-695, doi: 10.1109/PerComWorkshops59983.2024.10503398.
- [12] Alberto Ancilotto, Elisabetta Farella, "Painting the Starry Night using XiNets", 2024 IEEE International Conference on Pervasive Computing and Communications Workshops and other Affiliated Events (PerCom Workshops), Biarritz, France, 2024, pp. 684-689, doi: 10.1109/PerComWorkshops59983.2024.10502435.

2023

- [13] Velu Prabhakar Kumaravel and Elisabetta Farella, "IMU-integrated Artifacts Subspace Reconstruction for Wearable EEG Devices", 2023 IEEE International Conference on Bioinformatics and Biomedicine (BIBM), Istanbul, Turkiye, 2023, pp. 2508-2514, doi: 10.1109/BIBM58861.2023.10385390.
- [14] Alberto Ancilotto, Francesco Paissan, Elisabetta Farella, "XiNet: Efficient Neural Networks for tinyML," 2023 IEEE/CVF International Conference on Computer Vision (ICCV), Paris, France, 2023, pp. 16922-16931, doi: 10.1109/ICCV51070.2023.01556.
- [15] Alberto Ancilotto, Francesco Paissan, Elisabetta Farella, "PhiNet-GAN: Bringing real-time face swapping to embedded devices," 2023 IEEE International Conference on Pervasive Computing and

- Communications Workshops and other Affiliated Events (PerCom Workshops), Atlanta, GA, USA, 2023, pp. 677-682, doi: 10.1109/PerComWorkshops56833.2023.10150292.
- [16] Ancilotto, Alberto, Paissan, Francesco, Farella, Elisabetta (2023). XimSwap: many-to-many face swapping for TinyML. *ACM TRANSACTIONS ON EMBEDDED COMPUTING SYSTEMS*, ISSN: 1539-9087, doi: 10.1145/3603173
- [17] Francesco Paissan, Anisha Mohamed Sahabdeen, Alberto Ancilotto, Elisabetta Farella, “Improving latency performance trade-off in keyword spotting applications at the edge”, 2023 9th International Workshop on Advances in Sensors and Interfaces (IWASI), Monopoli (Bari), Italy, 2023, pp. 299-304, doi: 10.1109/IWASI58316.2023.10164328.
- [18] Leoni, Elia and Osman, Anas and Steccanella, Andrea and Gonnella, Pierpaolo and Darin, Marco and Murphy, Amy L. and Farella, Elisabetta, "Validating Vehicular Localization Indoor using UWB: Challenges and Solutions," 2023 9th International Workshop on Advances in Sensors and Interfaces (IWASI), Monopoli (Bari), Italy, 2023, pp. 27-32, doi: 10.1109/IWASI58316.2023.10164563.
- [19] Alessandro Bonfiglio, Elisabetta Farella, David Tacconi, Raoul M. Bongers, “Inertial Measurement Unit calibration methods for the wrist joint: Which one should I use?”, XXIX Conference of the International Society of Biomechanics (ISB), ISB/JSB2023, p.88 and p.229, Fukuoka (Japan), 20<sup>th</sup> July – 3<sup>rd</sup> August, 2023

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