

**FORMATO EUROPEO
PER IL CURRICULUM
VITAE**



INFORMAZIONI PERSONALI

Nome **BRUNELLI DAVIDE**

Data e Luogo di nascita

Indirizzo

Nazionalità

URL for web site: <https://webapps.unitn.it/du/it/Persona/PER0061723>

Researcher identifier(s):

ORCID: 0000-0001-5110-6823

ResearcherID: H-7927-2012

Scopus ID: 22233293600

<https://www.scopus.com/authid/detail.uri?authorId=22233293600>

EDUCATION

- Ph.D. in *Electrical Eng., Telecommunications and Computer Science*, University of Bologna, Italy, 2007.
- M.S. in *Electrical Engineering* (summa cum laude), University of Bologna, Italy, 2002.

PRESENT POSITIONS

2018-Today *Associate Professor* of Electronics and Embedded Systems, Department of Industrial Engineering (DII), University of Trento.

PAST POSITIONS

2013-2018 *Assistant Professor* of Electronics and Embedded Systems, Department of Industrial Engineering (DII), University of Trento.

2010-2013 *Assistant Professor* of Electronics, Department of Electrical Engineering and Computer Science (DISI), University of Trento.

2007-2010 *Research fellow*, Department of Electronic, Computer Science and Systems (DEIS), University of Bologna.

2005, 2007 *Visiting researcher*, ETH Zurich, Switzerland

PROFESSIONAL EXPERIENCE

- Consulting Professor at STMicroelectronics in 2016.
- Consulting Professor at the Faculty of Electrical Engineering (FER), University of Zagreb, (Croatia).
- Consulting Professor at the University of Bologna, (Italy) since 2010.
- Consulting Professor at TIM Italia (former Telecom Italia) in 2008, 2013-2015.

SUPERVISION OF GRADUATE STUDENTS AND POSTDOCTORAL FELLOWS

2006-Today 7 Postdocs, 8 PhD students, more than 45 Master Thesis students on Energy Harvesting. Microsystem control and smart sensing, on wake-up radio systems, and bio-electric-systems.

TEACHING ACTIVITIES

2010-present. Teaching of *Embedded systems*, University of Trento, Italy

2010-2013. Teaching of *Hardware software co-design*, University of Trento, Italy

2010-2011. Teaching of *Digital Architectures for Signal processing*, University of Trento, Italy

2013. Teaching at the School on Body Area Network – “Energy Harvesting techniques”, EPFL, CH

INSTITUTIONAL RESPONSIBILITIES

2010-2014 Graduate Students Advisor, University of Trento, Italy

2013-2014 Ph.D. Students Advisor, University of Trento, Italy

2010-2014. Member of the International PhD school on ICT, University of Trento, Italy

2010-2014. Member of the International PhD school on Mechatronics, University of Trento, Italy

COMMISSIONS OF TRUST

2014 *Independent Expert Evaluator* for the 'H2020-LCE-2014-3' European H2020 calls

2015-2017 *Independent Expert Evaluator* for Kazakhstan National Projects on "Future Energy Systems EXPO 2017's Asthana"

2015 *Independent Expert Evaluator* for The Croatian Science Foundation (HRZZ), peer review for Croatian National Projects on embedded electronic systems

2018 *Independent Expert Evaluator* for The Romanian Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI EEA), peer review for Romanian National Projects on embedded electronic systems

2018 *Independent Expert Evaluator* for The Fund for Scientific Research Brussels (FNRS)

2018 *Independent Expert Evaluator* for The Swiss National Science Foundation (SNF)

2015 *Independent Expert Evaluator* for Czech Science Foundation, peer review for Czech National Projects on electronic systems and energy harvesting.

2013 *Ph.D. dissertation committee member*, University of Zagreb, Croatia

2010-2014 Scientific Advisory Board of KissMyBike srl, Startup on IoT device and services, Italy

2008-Today Reviewer for several Journal: Microelectronics J. (since 2008), IEEE-TIE (since 2010), ACM-TECS, IEEE-Very Large Scale Integration Systems (since 2010), IEEE-TPELS (since 2011), IEEE-TC (since 2010), ACM-TOSN (since 2009), IEEE-TII (since 2011), IEEE-TIM (2009).

MEMBERSHIPS OF SCIENTIFIC AND PROFESSIONAL SOCIETIES

- Member, Research Network "EIT - European Institute of Innovation & Technology" (since 2010)
- Member, Research Network "EMSIG : EMbedded Systems Special Interest Group." (since 2012)
- Founding member of the Italian Association of Tenured-track Assistant Professors (since 2010)
- Senior Member of IEEE (since 2016)
- Member of the IEEE Circuit & Systems, Solid State Circuits and Computer Societies (since 2014)
- Member ACM (since 2014)

IMPACT OF THE SCIENTIFIC CONTRIBUTIONS

- **Energy Harvesting technologies.** I have been one of the early contributors in this area, with some pioneering works since 2006, now with hundreds of citations. The work was not only focused on hardware methods for energy conversion from unregulated power source, but also in the first research on real-time scheduling in platforms with energy harvesters.

- **Energy efficient digital architectures.** I developed techniques for reducing the power consumption in low resources embedded systems for wireless sensor networks. I pioneered the first research investigation about streaming voice over wireless Zigbee channels in an energy efficient manner.

- **Environmentally powered distributed sensing systems.** In this area, I developed high-efficiency wireless sensor nodes in various application domains from augmented reality to e-health. My work inspired several industrial prototypes, a patent jointly submitted with the biggest Italian telco company, and a start-up: MyPower Ltd (UK) www.my-power.it (as a co-founder).

IMPACT OF PUBLICATIONS

- **H-index = 49** (Extracted on Aug 1st 2022, from Google Scholar using Publish or Perish 6)

- **G-index = 82** (Extracted on Aug 1st 2022, from Google Scholar using Publish or Perish 6)

EVIDENCE OF INSPIRING RESEARCHERS

Several of my former graduate students won several international prizes or grants. Among these:

- **Maurizio Rossi**, won a 2-years post-doc position funded by Autonomous Province of Trento (Italy).
- **Parian Golchin** and **Brook Belay** won two research grants from IEEE Smart City Initiative.
- **Clemente Villani**, won the first prize as best master thesis at the Italian Innovation Design contest 2015.
- **Pietro Tosato**, won the Texas Instruments Innovation Challenge (TIIC) 2016, design contest for graduates.

FUNDRAISING AND COLLABORATIVE PROJECT (SELECTED).

1. *Embedded hardware technologies for IoT*. EIT-Digital (eit.europa.eu), (coordinator 100K€) 2017
2. FP7-ICT-2013.6.2 - n.609000 - *GreenDataNet* 4,3M€ (Head of Unit with 353K€) 2013
3. *EnerViS - Energy Autonomous Low Power Vision*. Trento agency (coordinator, 150K€) 2012
4. FP7-ICT-2009.3.5 - n. 257916 - *GENESI project* 3M€ (Work package leader 254K€) 2010
5. FP7-2010-NMP-ENV-ENERGY-ICT-EeB - n. 260162 - *3ENCULT* 6,7M€ (WP leader 370K€) 2010
6. ENIAC-JU n. 120214 - END – Models for Energy-Aware Design (Participant 300K€) 2010
7. FP7-ICT-2007.3.3 - n. 214373 - *ARTISTDesign - Network of Excellence* (Participant) 2010-2013
8. FP7-ICT-2007-2 - n. 224053 - *CoNET - Network of Excellence* (Participant) 2011-2012
9. FP7-ICT-2007.3.1 - n.216537 - *REALITY* - (Participant) 2009

MAJOR COLLABORATIONS

- Prof. Vedran Bilas, Energy Harvesting, Univ. of Zagreb (HR), Vedran.Bilas@fer.hr
- Prof. David Atienza, Energy harvesting and compressive sensing EPFL (CH), david.atienza@epfl.ch
- Prof. Leandro Lorenzelli, Microbial Fuel Cells, Fondazione Bruno Kessler (IT), lorenzelli@fbk.eu
- Prof. Chiara Petrioli, Energy autonomous WSN, Università La Sapienza (IT), petrioli@di.uniroma1.it
- Prof. Geoff Merrett, Energy harvesting, University of Southampton (UK), gym@ecs.soton.ac.uk
- Prof. Carlotta Guiducci, Sensing for energy harvesting, EPFL (CH), carlotta.guiducci@epfl.ch
- Prof. Mary Ann Weitnauer, Radio management, Georgia Tech (US), weitnauer@ece.gatech.edu
- Dr. Emanuel Popovici, Energy Harvesting, University College Cork (IE), e.popovici@ucc.ie
- Dr. David Boyle, Low power management, Imperial College (UK), david.boyle@imperial.ac.uk

CHAPTERS IN COLLECTIVE VOLUMES IN THE LAST 10 YEARS (5 OUT OF 10)

1. C. Moser, D. Brunelli, L. Thiele, L. Benini. Lazy Scheduling for Energy Harvesting Sensor Nodes. In *From Model-Driven Design to Resource Management for Distributed Embedded Systems*, Springer 2008.
2. Brunelli, D., et al. . Energy autonomous low power vision system. In *Lecture Notes in Electrical Engineering*, Springer 2014.
3. Vinco, A., Siddique, R., Brunelli, D. AA-battery sized energy harvesting power management module for indoor light wireless sensor applications. In *Lecture Notes in Electrical Engineering*, Springer 2016.
4. Brunelli, D., Magno, M., Porcarelli, D., Benini, L. A multi harvester with hydrogen fuel cell for outdoor applications. In *Lecture Notes in Electrical Engineering*, Springer 2014.
5. D. Brunelli, L. Tamburini, M. Rossi. Electronic and ICT solutions for smart buildings and urban areas. *Handbook of Research on Social, Economic, and Environmental Sustainability in the Development of Smart Cities*, pp. 165-192, 2015.

PATENT

1. D. Brunelli, D. Balsamo, V. Bella, F. Bellifemine, L. Benini (2017). Meter apparatus for measuring parameters of electrical quantity. Application WO/2017/207037

INVITED TALKS AND ORGANIZATION OF INTERNATIONAL CONFERENCES

1. Invited Speech. IEEE International Workshop on Industry 4.0 & Internet of Things, Rome 2017
2. Invited Speech. IEEE International Conference on VLSI and System-on-Chip, VLSI-Soc, Madrid 2010
3. Invited Speech. ACROSS Workshop on Cooperative Networked Embedded Systems, Zagreb 2013;
4. Invited lecture. Summer School on Wireless Body Sensor Networks (B-AWARE), EPFL, Lausanne 2011.

5. ACM ENSSYS (Energy Neutral Sensing Systems). General Co-Chair, 2013.
6. ACM ENSSYS (Energy Neutral Sensing Systems). Program Co-Chair, 2014 and 2015.
7. ACM/IEEE DATE (Design Automation and Test Europe). Topic Chair 2010-2016.
8. IEEE IoENT (Internet of Energy Neutral Things). General Co-Chair, 2017
9. UCaml, (Conference on Ubiquitous Computing and Ambient Intelligence) 2012, Program Co-Chair.
10. ACM Mobicase (*Int. Conference on Mobile Computing Applications*) 2011, Workshop Chair

INTERNATIONAL PRIZES / AWARDS:

1. Winner of the Texas Instruments Innovation Contest, as advising professor. 2016. "A long range monitoring system powered by Terrestrial Microbial Fuel Cell". I lead a group of 5 top students attending my course, and we demonstrated that it is possible to power a microcontroller using the energy generated by bacteria colony in the soil. Texas Instruments awarded the project with 6000€ (<http://www.ti.com/ww/eu/TIIC2016/>)
2. Best Paper Award in IEEE International Conference on Intelligent Sensors, Sensor Networks and Information Processing IEEE-ISSNIP (2011)
3. Best Paper Award IEEE International Workshop on Practical Issues in Building Sensor Network Applications IEEE SENSEAPP (2014)
4. Winner of the (Lamark Prize) for "AroundYou: smart sensor platforms for the Internet of Things" (2014)
5. Best Poster award Electronics Association group (Italy section) 2016, for "IoT-ready precision agriculture powered by microbial fuel-cells"

MEMBER OF EDITORIAL BOARDS (SELECTED)

1. Sensors journal (ISSN 1424-8220), Associate Editor, 2014- present.
2. International Journal of Distributed Sensors Networks (ISSN 1550-1477), Associate Editor, 2011-present.

PUBLICATIONS IN THE TOPIC OF STRUCTURAL HEALTH MONITORING

1. Girolami, A., Zonzini, F., De Marchi, L., Brunelli, D., Benini, L., "Modal Analysis of Structures with Low-cost Embedded Systems," (2018) Proceedings - IEEE International Symposium on Circuits and Systems, 2018-May, a
2. Girolami, A., Zonzini, F., De Marchi, L., Brunelli, D., Benini, L., "Modal Analysis of Structures with Low-cost Embedded Systems," (2018) Proceedings - IEEE International Symposium on Circuits and Systems, 2018-May,
3. Magno, M., Boyle, D., Brunelli, D., Popovici, E., Benini, L., "Ensuring survivability of resource-intensive sensor networks through ultra-low power overlays", (2014) IEEE Transactions on Industrial Informatics, 10 (2), art. no. 6687258, pp. 946-956.
4. Porcarelli, D., Spenza, D., Brunelli, D., Cammarano, A., Petrioli, C., Benini, L., "Adaptive rectifier driven by power intake predictors for wind energy harvesting sensor networks," (2015) IEEE Journal of Emerging and Selected Topics in Power Electronics, 3 (2) pp. 471-482.

Data 22/08/2022

Firma

Autorizzo il trattamento dei dati personali contenuti nel presente documento in base all'art. 13 del D. Lgs. 196/2003.

I give permission to process my personal details as per Italian law, legislative decree of 30th June 2003, n. 196 (Code for the protection of personal data)

Trento, 22/08/2022

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