Matteo Zauli

Curriculum vitae

Personal information

Family name **Zauli**

First name **Matteo**

Date and place of birth

Education

Nov. 2019 - Jan. 2023 **PhD in Structural and Environmental Health Monitoring and Management - SEHM2**, Alma Mater Studiorum University of Bologna, Italy
- Thesis title: "Hardware-Software Design of Embedded Systems for Intelligent Sensing Applications"

2015 - March 2019 **Master Degree in Electronics Engineering**, *110/110 cum laude*, Alma Mater Studiorum University of Bologna, Italy
- Thesis title: "Designing of a phantom for carotid flow analysis by ultrasonic acquisitions"

Sep. 2016 - Jan. 2017 **Erasmus**, *BME - Budapest University of technology and economics, Hungary*
Taken lectures in artificial intelligence, sensor networks, computer security, mobile communication systems and microelectronic.

2008 - March 2015 **Bachelor Degree in Electronics and Telecommunications Engineering**, Alma Mater Studiorum University of Bologna, Italy
- Thesis title: "Generation and acquisition of signals using Digilent Analog Discovery devices"

2003-2008 **High school diploma: Chief qualified industrial technician specialized in electronics and telecommunications**, *ITIS "Nullo Baldini"*, Ravenna, Italy
- Diploma thesis title: "Design and implementation of a digital thermometer".
  PCB design, assembly components, programming of Atmel AT89C51 by Assembly language.

Working experiences

Sep. 2023 - present
Adjunct professor, *at DEI-Department of Electrical, Electronic, and Information Engineering "Guglielmo Marconi", University of Bologna, Italy. Mechatronics, "Laboratorio di Elettronica P-LU".*

June 2019 - Oct. 2019, Feb. 2023 - present
Research fellow, *(Assegnista di ricerca) at ARCES-Advanced Research Center on Electronic Systems "Ercole De Castro", University of Bologna, Italy. Research topics: Structural Health Monitoring, Bioengineering, Agriculture 4.0, Automotive, Embedded Systems microcontroller-based.*,
Partnerships for industrial projects: Rete Ferroviaria Italiana (RFI), HPE-Group.
National academic research projects: MAC4PRO (INAIL), DS2 (INAIL), Istitutio Italiano Tecnologia (IIT).
European academic projects: Arrowhead Tools.

Feb. 2023 - present
University Course Tutor, *of "Progetto di Circuiti e Sistemi Analogici" ("Design On Analog Cicuits and Systems M (Module 1)"), at University of Bologna, Italy.*

Sep. 2019 - Jan. 2023
University Course Tutor, *of "Elettronica Industriale P" ("Industrial Electronics P"), at University of Bologna, Italy.*

May 2015 - May 2019
R&D Engineer, *Electrical engineer and programmer at GH Enterprise. Designing and development of embedded systems, IoT platform developer.*

2010 - 2019
Web designer, *freelance. Design and development of websites from concept to completion, including post production site maintenance*

2006 - 2009
Computer repair technician, *providing computer training, building or configuring new hardware, installing and updating software packages*

Languages

Italian
Mother tongue

English
B2 level, *good English speaking and writing*

Software competencies

Programming languages:
HTML5, CSS3, PHP, Javascript, C, C++, MATLAB, VHDL, Assembler x86, Python

Development software:
- Electronic Design Automation and Simulation: OrCAD, KiCAD, Cadence
- Simulation and Computing software: LTspice, MATLAB
- Integrated Development Environment: Eclipse, Qt Creator, Visual Studio Code, STM32CubeIDE

Desktop and Office applications:
- Office: LibreOffice, Microsoft Office
- Graphics: Gimp, Inkscape, Adobe Photoshop, Adobe Illustrator

Operating Systems:
Microsoft Windows, Linux (openSUSE, Kubuntu)

Publications

Journal **5 papers**, *last: "Exploring Microphone Technologies for Digital Auscultation Devices", Micromachines, 2023.*

Conference proceedings **14 papers**, *last: "A novel smart sensor node with embedded signal processing functionalities addressing vibration–based monitoring", Springer, 2023.*

1. M. Zauli, L. M. Peppi, L. Di Bonaventura, V. A. Arcobelli, A. Spadotto, I. Diemberger, V. Coppola, S. Mellone, and L. De Marchi, "Exploring microphone technologies for digital auscultation devices," *Micromachines*, vol. 14, no. 11, p. 2092, 2023
2. M. Zauli, F. Zonzini, V. Coppola, V. Dertimanis, E. Chatzi, N. Testoni, and L. De Marchi, "A novel smart sensor node with embedded signal processing functionalities addressing vibration–based monitoring," in *European Workshop on Structural Health Monitoring*, pp. 1000–1008, Springer, 2023
3. M. Zauli, F. Zonzini, N. Testoni, A. Marzani, and L. De Marchi, "Compressive sensing and on-board data recovery for vibration–based shm," in *European Workshop on Structural Health Monitoring*, pp. 327–334, Springer, 2020
4. M. Zauli, C. Corsi, and L. De Marchi, "Design and prototype development of a low-cost blood flow simulator for vascular phantoms," in *2019 Computing in Cardiology (CinC)*, pp. Page–1, IEEE, 2019
5. M. Nerone, I. Valič, M. Zauli, N. Matteazzi, and L. De Marchi, "A low power nfc data over power acquisition system for high speed electric motor rotors," in *2023 IEEE International Workshop on Metrology for Automotive (MetroAutomotive)*, pp. 88–93, IEEE, 2023
6. A. Zanellini, S. Pellegrini, M. Nerone, I. Valic, M. Zauli, L. De Marchi, N. Matteazzi, M. Violi, and R. Rovatti, "Temperature sensors virtualization in high performance electric motors," in *2023 IEEE International Workshop on Metrology for Automotive (MetroAutomotive)*, pp. 99–104, IEEE, 2023
7. S. Taccetti, L. M. Peppi, F. Zonzini, M. Mohammadgholiha, M. Zauli, and L. De Marchi, "Design of a novel pulser for frequency selective-based power and data transmission," in *2023 IEEE International Workshop on Metrology for Automotive (MetroAutomotive)*, pp. 83–87, IEEE, 2023
8. V. A. Arcobelli, M. Zauli, G. Galteri, L. Cristofolini, L. Chiari, A. Cappello, L. De Marchi, and S. Mellone, "mcrutch: A novel m-health approach supporting continuity of care," *Sensors*, vol. 23, no. 8, p. 4151, 2023
9. F. Montori, I. Zyrianoff, L. Gigli, A. Calvio, R. Venanzi, S. Sindaco, L. Sciullo, F. Zonzini, M. Zauli, N. Testoni, *et al.*, "An iot toolchain architecture for planning, running and managing a complete condition monitoring scenario," *IEEE Access*, 2023
10. F. Zonzini, A. Carbone, F. Romano, M. Zauli, and L. De Marchi, "Machine learning meets compressed sensing in vibration-based monitoring," *Sensors*, vol. 22, no. 6, p. 2229, 2022
11. M. Nerone, I. Valič, M. Zauli, A. Leonardi, N. Matteazzi, and L. De Marchi, "A wirelessly-powered embedded system for temperature measurements of a high performance electric motor rotor," in *2022 IEEE International Workshop on Metrology for Automotive (MetroAutomotive)*, pp. 6–11, IEEE, 2022
12. F. Zonzini, M. Zauli, M. Mangia, N. Testoni, and L. De Marchi, "Model-assisted compressed sensing for vibration-based structural health monitoring," *IEEE Transactions on Industrial Informatics*, 2021
13. L. M. Peppi, M. Zauli, L. Manfrini, L. C. Grappadelli, L. De Marchi, and P. A. Traverso,

"Implementation and calibration of a low-cost sensor node for high-resolution, continuous and no-manning recording of fruit growth," in *2021 IEEE International Instrumentation and Measurement Technology Conference (I2MTC)*, pp. 1–6, IEEE, 2021
14. I. Valič, M. Zauli, N. Matteazzi, G. Foffano, and L. De Marchi, "A wireless system for inner temperature measurement of high speed electric motors," in *2021 IEEE International Workshop on Metrology for Automotive (MetroAutomotive)*, pp. 248–253, IEEE, 2021
15. F. Zonzini, F. Romano, A. Carbone, M. Zauli, and L. De Marchi, "Enhancing vibration-based structural health monitoring via edge computing: A tiny machine learning perspective," in *Quantitative Nondestructive Evaluation*, vol. 85529, p. V001T07A004, American Society of Mechanical Engineers, 2021
16. F. Zonzini, M. Zauli, M. Mangia, N. Testoni, and L. De Marchi, "Hw-oriented compressed sensing for operational modal analysis: The impact of noise in mems accelerometer networks," in *2021 IEEE Sensors Applications Symposium (SAS)*, pp. 1–5, IEEE, 2021
17. F. Montori, I. Zyrianoff, L. Gigli, R. Venanzi, S. Sindaco, C. Aguzzi, F. Zonzini, M. Zauli, N. Testoni, E. Alessi, *et al.*, "A toolchain architecture for condition monitoring using the eclipse arrowhead framework," in *IECON 2021–47th Annual Conference of the IEEE Industrial Electronics Society*, pp. 1–6, IEEE, 2021
18. L. M. Peppi, M. Zauli, L. Manfrini, P. A. Traverso, L. C. Grappadelli, and L. De Marchi, "A low-cost and high-accuracy non-invasive system for the monitoring of fruit growth," in *2020 IEEE International Workshop on Metrology for Agriculture and Forestry (MetroAgriFor)*, pp. 18–23, IEEE, 2020
19. F. Zonzini, M. Zauli, A. Carbone, F. Romano, N. Testoni, and L. De Marchi, "Hardware–oriented data recovery algorithms for compressed sensing–based vibration diagnostics," in *International Conference on Applications in Electronics Pervading Industry, Environment and Society*, pp. 69–75, Springer, 2020