

PERSONAL INFORMATION **Emilio Sardini**

CURRENT POSITION Full professor at the Department of Information Engineering of the University of Brescia

WORK EXPERIENCE

- 01/01/2020–Present Member of the scientific technical committee of the Competence Center MADE –Politecnico di Milano
- 1/07/2022-Present Member of the Technical Committee Associazione Fabbrica Intelligente Regione Lombardia
01/09/022- Present President of the National Scientific Group “Misure Elettriche ed Elettroniche”
- 01/09/2019–31/08/2022 Vice President of the National Scientific Group “Misure Elettriche ed Elettroniche”
- 01/07/2018–31/06/2020 Member of the ASN (Abilitazione Scientifica Nazionale) Parallel Commission ING-INF/07.
- 01/01/2012–31/10/2020 **Head of the Department of Information Engineering**
The Department has been evaluated as “Department of excellence 2018 2022” based on a national ranking of all Italian Department carried out by Italian government agency ANVUR (Agenzia Nazionale di Valutazione del Sistema Universitario e della Ricerca).
- 01/01/2012–31/10/2020 Member of the Academic Senate of the University of Brescia
- 01/07/2009–31/10/2020 Coordinator of the PhD "Technology for Health"
- 01/11/2006–Present Full professor at the Department of Information Engineering (formerly previously Department of Electronics for Automation), Faculty of Engineering, University of Brescia
- 01/07/2016–30/06/2018 Member of the Directive Commission of the Associazione Fabbrica Intelligente Lombardia (AFIL)
- 01/11/2009–31/10/2012 Deputy Dean of the Faculty of Engineering, University of Brescia
- 01/11/2007–31/10/2010 Member of Mechatronics PhD Faculty at the University of Bergamo
- 01/11/2001–31/10/2009 Chancellor's delegate by the University of Brescia of the Board of School SILSIS section of Bergamo Brescia (Lombard Interuniversity School for the higher education)
- 01/11/2001–31/10/2004 Member of the Board of Governors of the University of Brescia
- 01/11/1998–31/10/2006 Associate Professor at the Department of Electronics for Automation, Faculty of Engineering, University of Brescia
- 01/11/1989–31/10/1997 Member of the Integrated Academic Senate of the University of Brescia
- 01/03/1986–31/10/1998 Researcher at the Department of Electronics for Automation of the Faculty of Engineering, University of Brescia
- 1985–Present Teaching activities**
Emilio Sardini has been working in education and he held or he is holding the following courses:
from 08/09: Sensors
from 06/07 up to 08/09: "Elements of electronic instrumentation;
from 04/05: Microprocessor based instrumentation (formerly previously "Digital instrumentation and microprocessor systems.")
in the academic years 04/05 and 05/06, "Digital instrumentation and microprocessor systems."
in the academic years 03/04, 04/05 and 05/06: "Elements of electronic instrumentation";

from 03/04 up 08/09: "Teaching of digital instrumentation and microprocessor systems" at the University of Bergamo;

from 03/04 up 07/08: "Instrumentation for control of production";

from 02/03 up 08/09: "Electronics and Instrumentation B";

from 02/03 up 05/04: "Electrical and Electronics Instrumentation";

from 99/00 up 01/02: "Electrical and Industrial Measuring Instruments DU ";

from 92/93 to 96/97: "Applied Electronics" (96/97 in the academic year the course has changed its name to "Electronics");

from 91/92 to 01/02: "Instrumentation and Electronic Measurements ".

from 86/87 to 93/94: "Electrical Measurements";

in the academic year 85/86: "Industrial Electronics" and "Automatic Instrument for Industrial Measurements";

EDUCATION AND TRAINING

1979–1983 **Degree in Electronic Engineering**
Politecnico of Milan, Milano (italy)

PERSONAL SKILLS

Mother tongue(s)

Foreign language(s)

UNDERSTANDING		SPEAKING		WRITING
Listening	Reading	Spoken interaction	Spoken production	

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

Communication skills

-
-
-
-
-
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Organisational and managerial skills **Management of research programs**

Emilio Sardini is the principal Investigator of the PRIN project " New sensors and measurement techniques for underground monitoring and mapping."

Emilio Sardini is the Local Scientific Coordinator of the project "Made in Italy Circolare e Sostenibile" from the call Avviso pubblico per la presentazione di Proposte di intervento per la creazione di "Partenariati estesi alle università, ai centri di ricerca, alle aziende per il finanziamento di progetti di ricerca di base" – nell'ambito del Piano Nazionale di Ripresa e Resilienza, Missione 4 "Istruzione e ricerca" – Componente 2 "Dalla ricerca all'impresa" – Investimento 1.3, finanziato dall'Unione europea – NextGenerationEU

Emilio Sardini has been the Scientific Coordinator of the project "GLOREHA HOME TC Home device for the support of the rehabilitation of patients with deficits in the hand". The project has been submitted

to the Call: PROGETTI DI RICERCA INDUSTRIALE E SVILUPPO SPERIMENTALE NEI SETTORI STRATEGICI DIREZIONE LOMBARDIA E DEL MINISTERO DELL'ISTRUZIONE, DELL'UNIVERSITA' E DELLA RICERCA DI CUI AL DECRETO N. 7128 DEL 29 LUGLIO 2011. The project won a financial grant amounting to € 1,180,399.57. The University of Brescia, that is the university of the principal investigator, participates in the project along with IDROGENET S.R.L., CASA DI CURA HABILITA S.P.A., GREINER - S.P.A., FONDAZIONE SALVATORE MAUGERI CLINICA, POLIBRIXIA S.R.L.

Emilio Sardini has been the Scientific Coordinator for the University of Brescia of research project "ADAPTIVE MANUFACTURING " one of the four project approved in the "Smart Factory" Cluster. The University of Brescia participates together with SCM Group Spa, Spa AVIO, SIR Spa, CTC Srl, ITALY COPAN Spa, SCAGLIA INDEVA Spa, Spa Balluff, AEA-GROUP Srl LOCCIONI, COSBERG Spa, Spa MASMEC, EICAS AUTOMATION Spa, University of Modena and Reggio Emilia, University of Bergamo, University of Naples "Federico II". The whole budget of these projects is about € 12 millions while the grant for the University of Brescia has an estimated value of € 600,000.

In another specific program, " PROGRAMMA DI INTERVENTO IN ATTUAZIONE DELL' "ACCORDO PER LO SVILUPPO DEL CAPITALE UMANO NEL SISTEMA UNIVERSITARIO LOMBARDO", Emilio Sardini has been in charge for the implementation of the research program "Technologies for Health ".The project won a financial contribution of € 332,800.00. The intervention is aimed at the advancement of knowledge in the field of technology for health and the promotion of technology transfer to the industry.

The activity of management for the proposal and the development of research projects is also reflected in the activity carried by Emilio Sardini as Coordinator of the PhD "Technology for Health", in which he promoted the development of international activities with the University Pierre et Marie Curie in Paris (now Sorbonne University).

In the general framework of innovating projects, not specifically of research, Emilio Sardini has played a role of responsibility, assigned by the Faculty of Engineering of the University of Brescia, in the drafting and management of two projects financed by Fondazione Cariplo. These two projects have applied to the call "Promoting the formation of human capital of excellence" in the two editions of 2010 and 2011, and after a review process the Fondazione Cariplo granted the following two projects:

- a) "UNIBS International Graduate Program 2011-2012" that won a grant of € 173,750;
- b) "Towards International Education and Excellence" that won a grant of 155,000 €

Management of Department.

Emilio Sardini is the Director of the Department of Information Engineering of University of Brescia. The Department has been evaluated as "Department of excellence 2018 2022" based on a national ranking of all Italian Department carried out by Italian government agency ANVUR (Agenzia Nazionale di Valutazione del Sistema Universitario e della Ricerca) and has been granted with a fund of 7.000.000€ for researcher's recruitment and teaching and research activities.

Management of Faculty.

Emilio Sardini has been Deputy Dean of the Faculty of Engineering, University of Brescia from 01/11/2009 up to 31/10/2012

Job-related skills **Indexes**

Scopus Author ID: 6603600853
Scopus: documents 136; citazioni 1533; H-index 22.

Research

The research activity of Emilio Sardini has been developed at the Department of Electronics for Automation University of Brescia, in the laboratories of electronic instrumentation and sensors, where, by their constitution, he conducts research in the fields of instrumentation, both analog and digital, sensors for physical quantities. In particular the research of Emilio Sardini ranges on various issues relating to measuring instruments or sensors and can be classified mainly into four main areas:

- 1) measurement instrumentation of physical quantities;
- 2) instrumentation for the characterization of sensors;
- 3) sensors for measuring physical quantities;
- 4) autonomous sensors;
- 5) sensors for health.

Publications **SELECTED RECENT PUBLICATIONS ON INTERNATIONAL JOURNALS**

- [1.] Abdullah, S., Serpelloni, M., Sardini, E., Design of multichannel potentiostat for remote and longtime monitoring of glucose concentration during yeast fermentation, (2020) *The Review of scientific instruments*, 91 (5), p. 054104. DOI: 10.1063/1.5137789
- [2.] Bellitti, P., Angelis, A.D., Dlonigi, M., Sardini, E., Serpelloni, M., Moschitta, A., Carboni, A., A wearable and Wirelessly Powered System for Multiple Finger Tracking, (2020) *IEEE Transactions on Instrumentation and Measurement*, 69 (5), 8968384, pp. 2542-2551. DOI: 10.1109/TIM.2020.2969089
- [3.] Tonello, S., Bianchetti, A., Braga, S., Almici, C., Marini, M., Piovani, G., Guindani, M., Dey, K., Sartore, L., Re, F., Russo, D., Cantù, E., Lopomo, N.F., Serpelloni, M., Sardini, E., Impedance-based monitoring of mesenchymal stromal cell three-dimensional proliferation using aerosol jet printed sensors: A tissue engineering application, (2020) *Materials*, 13 (10), art. no. 2231, DOI: 10.3390/ma13102231
- [4.] Serpelloni, M., Cantù, E., Borghetti, M., Sardini, E., Printed smart devices on cellulose-based materials by means of aerosol-jet printing and photonic curing, (2020) *Sensors (Switzerland)*, 20 (3), art. no. 841, DOI: 10.3390/s20030841
- [5.] Tonello, S., Stradolini, F., Abate, G., Uberti, D., Serpelloni, M., Carrara, S., Sartore, L., Electrochemical detection of different p53 conformations by using nanostructured surfaces, (2019) *Scientific Reports*, 9 (1), art. no. 17347, DOI: 10.1038/s41598-019-53994-6
- [6.] Borghetti, M., Serpelloni, M., Sardini, E., Printed strain gauge on 3D and low-melting point plastic surface by aerosol jet printing and photonic curing, (2019) *Sensors (Switzerland)*, 19 (19), art. no. 4220, DOI: 10.3390/s19194220
- [7.] Tonello, S., Borghetti, M., Lopomo, N.F., Serpelloni, M., Sardini, E., Marziano, M., Serzanti, M., Uberti, D., Dell'era, P., Inverardi, N., Gualandi, C., Focarete, M.L., Ink-jet printed stretchable sensors for cell monitoring under mechanical stimuli: A feasibility study, (2019) *Journal of Mechanics in Medicine and Biology*, 19 (6), art. no. 1950049, DOI: 10.1142/S0219519419500490
- [8.] Marziano, M., Tonello, S., Cantù, E., Abate, G., Vezzoli, M., Rungratanawanich, W., Serpelloni, M., Lopomo, N.F., Memo, M., Sardini, E., Uberti, D., Monitoring Caco-2 to enterocyte-like cells differentiation by means of electric impedance analysis on printed sensors, (2019) *Biochimica et Biophysica Acta - General Subjects*, 1863 (5), pp. 893-902, DOI: 10.1016/j.bbagen.2019.02.008
- [9.] Di Novo, N.G., Cantù, E., Tonello, S., Sardini, E., Serpelloni, M., Support-material-free microfluidics on an electrochemical sensors platform by aerosol jet printing, (2019) *Sensors (Switzerland)*, 19 (8), art. no. 1842, DOI: 10.3390/s19081842
- [10.] Re, F., Sartore, L., Moulisova, V., Cantini, M., Almici, C., Bianchetti, A., Chinello, C., Dey, K., Agnelli, S., Manfredini, C., Bernardi, S., Lopomo, N.F., Sardini, E., Borsani, E., Rodella, L.F., Savoldi, F., Paganelli, C., Guizzi, P., Lisignoli, G., Magni, F., Salmeron-Sanchez, M., Russo, D., 3D gelatin-chitosan hybrid hydrogels combined with human platelet lysate highly support human mesenchymal stem cell proliferation and osteogenic differentiation (2019) *Journal of Tissue Engineering*, 10, DOI: 10.1177/2041731419845852
- [11.] Khan, M.A., Borghetti, M., Serpelloni, M., Sardini, E., Implantable autonomous device for wireless for measurement in total knee prosthesis, (2019) *IEEE Instrumentation and Measurement Magazine*, 22 (1), art. no. 8633351, pp. 39-47, DOI: 10.1109/MIM.2019.8633351
- [12.] Bellitti, P., Bodini, A., Borghetti, M., Filippini, M., Latronico, N., Sardini, E., Serpelloni, M., Tonello, S., A compact low-power wireless system for in vivo evaluation of heat and moisture exchanger performance, (2019) *Measurement Science and Technology*, 30 (2), art. no. 025701, DOI: 10.1088/1361-6501/aaf406
- [13.] Abdullah, S., Tonello, S., Borghetti, M., Sardini, E., Serpelloni, M., Potentiostats for protein biosensing: Design considerations and analysis on measurement characteristics, (2019) *Journal of Sensors*, 2019, art. no. 6729329, DOI: 10.1155/2019/6729329
- [14.] Bellitti, P., Bona, M., Borghetti, M., Sardini, E., Serpelloni, M., Fontana, R., A reconfigurable measuring system for the automatic detection of bacterial growth in a specimen processing platform, (2019) *Acta IMEKO*, 8 (2), pp. 35-44, DOI: 10.21014/acta_imeko.v8i2.634
- [15.] Khan, M.A., Cantù, E., Tonello, S., Serpelloni, M., Lopomo, N.F., Sardini, E., A review on biomaterials for 3D conductive scaffolds for stimulating and monitoring cellular activities, (2019) *Applied Sciences (Switzerland)*, 9 (5), art. no. 961, DOI: 10.3390/app9050961
- [16.] Filippini, M., Serpelloni, M., Quaranta, V., Bellitti, P., Sardini, E., Latronico, N., A New Method for in Vivo Analysis of the Performances of a Heat and Moisture Exchanger (HME) in Mechanically Ventilated Patients, (2019) *Pulmonary Medicine*, 2019, art. no. 9270615, DOI: 10.1155/2019/9270615
- [17.] Cantù, E., Tonello, S., Abate, G., Uberti, D., Sardini, E., Serpelloni, M., Aerosol jet printed 3D electrochemical sensors for protein detection, (2018) *Sensors (Switzerland)*, 18 (11), art. no. 3719, DOI: 10.3390/s18113719
- [18.] Bona, M., Borghetti, M., Sardini, E., Serpelloni, M., Telemetric Technique for Passive Resistive Sensing

Based on Impedance Real Part Measurement at Fixed Frequency, (2018) IEEE Transactions on Instrumentation and Measurement, 67 (9), art. no. 8316934, pp. 2160-2168, DOI: 10.1109/TIM.2018.2811279

- [19.] Tonello, S., Abate, G., Borghetti, M., Marziano, M., Serpelloni, M., Uberti, D.L., Lopomo, N.F., Memo, M., Sardini, E., Wireless Point-of-Care Platform with Screen-Printed Sensors for Biomarkers Detection (2017) IEEE Transactions on Instrumentation and Measurement, 66 (9), art. no. 7911179, pp. 2448-2455, DOI: 10.1109/TIM.2017.2692308
- [20.] Borghetti, M., Serpelloni, M., Sardini, E., Casas, O., Multisensor system for analyzing the thigh movement during walking, (2017) IEEE Sensors Journal, 17 (15), art. no. 7949004, pp. 4953-4961, DOI: 10.1109/JSEN.2017.2715857

SELECTED RECENT CONTRIBUTES IN INTERNATIONAL CONFERENCES PROCEEDINGS

- [21.] Cantù, E., Soprani, M., Ponzoni, A., Sardini, E., Serpelloni, M., Preliminary analysis on cellulose-based gas sensor by means of aerosol jet printing and photonic sintering, (2020) BIODEVICES 2020 - 13th International Conference on Biomedical Electronics and Devices, Proceedings; Part of 13th International Joint Conference on Biomedical Engineering Systems and Technologies, BIOSTEC 2020, pp. 200-206.
- [22.] Bellitti, P., Bona, M., Borghetti, M., Sardini, E., Serpelloni, M., Application of a Modular Wearable System to Track Workers' Fingers Movement in Industrial Environments, (2019) 2019 IEEE International Workshop on Metrology for Industry 4.0 and IoT, MetroInd 4.0 and IoT 2019 - Proceedings, art. no. 8792859, pp. 137-142. DOI: 10.1109/METROI4.2019.8792859
- [23.] Bellitti, P., Sardini, E., Serpelloni, M., Angelis, A.D., Dionigi, M., Moschitta, A., Carbone, P., Development of a wirelessly-powered wearable system for finger tracking, (2019) I2MTC 2019 - 2019 IEEE International Instrumentation and Measurement Technology Conference, Proceedings, 2019-May, art. no. 8827062, DOI: 10.1109/I2MTC.2019.8827062
- [24.] Cantù, E., Tonello, S., Serpelloni, M., Sardini, E., Aerosol jet printed sensors for protein detection: A preliminary study, (2019) Lecture Notes in Electrical Engineering, 539, pp. 317-327, DOI: 10.1007/978-3-030-04324-7_40
- [25.] Bellitti, P., Bona, M., Sardini, E., Serpelloni, M., Preliminary study on wearable system for multiple finger tracking, (2019) Lecture Notes in Electrical Engineering, 539, pp. 551-558, DOI: 10.1007/978-3-030-04324-7_66
- [26.] Bodini, A., Sardini, E., Serpelloni, M., Pandini, S., Novel coplanar capacitive force sensor for biomedical applications: A preliminary study, (2019) Lecture Notes in Electrical Engineering, 539, pp. 329-336, DOI: 10.1007/978-3-030-04324-7_41
- [27.] Bellitti, P., Bona, M., Fontana, S., Sardini, E., Serpelloni, M., Study toward the integration of a system for bacterial growth monitoring in an automated specimen processing platform, (2019) Lecture Notes in Electrical Engineering, 539, pp. 445-454, DOI: 10.1007/978-3-030-04324-7_54
- [28.] Khan, M.A., Lopomo, N.F., Serpelloni, M., Sardini, E., Sartore, L., Characterization of sensorized porous 3D gelatin/chitosan scaffolds via bio-impedance spectroscopy, (2019) Lecture Notes in Electrical Engineering, 539, pp. 609-617, DOI: 10.1007/978-3-030-04324-7_72
- [29.] Abdullah, S., Serpelloni, M., Tonello, S., Sardini, E., Abate, G., Uberti, D., Spectrophotometer measurements to characterize conformational state of the proteins: P53 analysis, (2018) MeMeA 2018 - 2018 IEEE International Symposium on Medical Measurements and Applications, Proceedings, art. no. 8438807, DOI: 10.1109/MeMeA.2018.8438807
- [30.] Bona, M., Bellitti, P., Sardini, E., Serpelloni, M., Study for the Integration of a Measuring System to Automated Platform for Monitoring the Growth of Bacterial Cultures, (2018) 2018 Workshop on Metrology for Industry 4.0 and IoT, MetroInd 4.0 and IoT 2018 - Proceedings, art. no. 8428321, pp. 264-268, DOI: 10.1109/METROI4.2018.8428321
- [31.] Bodini, A., Pandini, S., Sardini, E., Serpelloni, M., Design and fabrication of a flexible capacitive coplanar force sensor for biomedical applications, (2018) 2018 IEEE Sensors Applications Symposium, SAS 2018 - Proceedings, 2018-January, pp. 1-5, DOI: 10.1109/SAS.2018.8336775
- [32.] Bodini, A., Cantu, E., Serpelloni, M., Sardini, E., Tonello, S., Design and implementation of a microsensor platform for protein detection realized via 3-D printing, (2018) 2018 IEEE Sensors Applications Symposium, SAS 2018 - Proceedings, 2018-January, pp. 1-6, DOI: 10.1109/SAS.2018.8336743
- [33.] Bona, M., Borghetti, M., Bellitti, P., Serpelloni, M., Sardini, E., A concept sensor-based system to be integrated in an existing automated platform monitoring bacterial growth, (2018) 2017 International Conference on Engineering, Technology and Innovation: Engineering, Technology and Innovation Management Beyond 2020: New Challenges, New Approaches, ICE/ITMC 2017 - Proceedings, 2018-January, pp. 474-481, DOI: 10.1109/ICE.2017.8279923
- [34.] Bona, M., Sardini, E., Serpelloni, M., Andò, B., Lombardo, C.O., Study on impedance behavior of a telemetric system operating with an inkjet-printed resistive strain gauge, (2018) Lecture Notes in Electrical Engineering, 431, pp. 258-266, DOI: 10.1007/978-3-319-55077-0_34
- [35.] Tonello, S., Serpelloni, M., Lopomo, N.F., Abate, G., Uberti, D.L., Sardini, E., Preliminary study of a low-cost point-of-care testing system using screen-printed biosensors for early biomarkers detection related to Alzheimer disease, (2018) Lecture Notes in Electrical Engineering, 431, pp. 238-246, DOI: 10.1007/978-3-319-55077-0_32

- [36.] Borghetti, M., Demori, M., Ferrari, M., Ferrari, V., Sardini, E., Serpelloni, M., Impedance sensors embedded in culture media for early detection of bacteria growth,(2018) Lecture Notes in Electrical Engineering, 431, pp. 218-228,DOI: 10.1007/978-3-319-55077-0_29
- [37.] Borboni, A., Serpelloni, M., Borghetti, M., Amici, C., Aggogeri, F., Fausti, D., Antonini, M., Mor, M., Sardini, E., Faglia, R., Hand robotic rehabilitation: From hospital to home,(2018) Mechanisms and Machine Science, 49, pp. 877-884, DOI: 10.1007/978-3-319-61276-8_93
- [38.] Marziano, M., Tonello, S., Serzanti, M., Borghetti, M., Lopomo, N.F., Serpelloni, M., Pandini, S., Merlettini, A., Gualandi, C., Focarete, M.L., Messori, M., Toselli, M., Uberti, D., Memo, M., Dell'Era, P., Sardini, E., Carbon on poly(ϵ -caprolactone) (PCL) ink-jet printed sensor for monitoring cell cultures of myoblasts,(2018) IFMBE Proceedings, 65, pp. 783-786, DOI: 10.1007/978-981-10-5122-7_196
- [39.] Bellitti, P., Bona, M., Borghetti, M., Sardini, E., Serpelloni, M., Flexible monitoring system for automatic detection of bacterial growth in a commercial specimen processing platform,(2017) RTSI 2017 - IEEE 3rd International Forum on Research and Technologies for Society and Industry, Conference Proceedings, art. no. 8065950,DOI: 10.1109/RTSI.2017.8065950
- [40.] Mekki, F., Borghetti, M., Sardini, E., Serpelloni, M., Wireless instrumented cane for walking monitoring in Parkinson patients,(2017) 2017 IEEE International Symposium on Medical Measurements and Applications, MeMeA 2017 - Proceedings, art. no. 7985912, pp. 414-419,DOI: 10.1109/MeMeA.2017.7985912

BOOKS

- [41.] CADEI A., DIONISI A., LUCIANO V., SARDINI E., SERPELLONI M. (2014) Portable systems. In: John G. Webster; Halit Eren. Measurement, Instrumentation, and Sensors Handbook, Second Edition: Spatial, Mechanical, Thermal, and Radiation Measurement. vol. unico, p. 1-17, CRC PRESS, ISBN: 9781439848883
- [42.] MARIOLI D., SARDINI E., SERPELLONI M. (2010) Inductive telemetric measurement systems for remote sensing. In: Milind Kr Sharma. Advances in Measurement Systems. vol. UNICO, p. 342-364, INTECH ISBN: 9789533070612, doi: 10.5772/8732

26/09/2023