
BIOGRAPHICAL SKETCH

NAME: Danilo PANI

POSITION TITLE: Associate professor of biomedical engineering

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
University of Cagliari (Italy)	Laurea (MSc)	10/2002	Electronic engineering
University of Cagliari (Italy)	PhD	03/2006	Electronic and computer engineering

A. Personal Statement

(Here you can insert a short description of your professional status and achievements. Max 10 lines)

Danilo Pani is associate professor of biomedical engineering (IBIO-01/A) at the University of Cagliari and teaches biomedical signal processing (basic and advanced courses) and biomedical instrumentation for the biomedical engineering courses and for the course on neurophysiopathological techniques. He is also the Coordinator of the BSc and MSc program in Biomedical Engineering, and served as vicedirector of the Department of electrical and electronic engineering, both at the University of Cagliari. He is IEEE senior member, and member of GNB, SIAMOC, and UNINFO. He founded and co-directed the IEEE Sensors Council Italy Chapter and has been member of the board of directors of the national bioengineering group (GNB). In 2019 he founded (and since then leads) the Medical Devices and Signal Processing (MeDSP.it) University of Cagliari.

B. Positions and Honors

Positions and Employment

(Complete the following table. Begin with older positions. Add/delete rows as necessary.)

<i>date1- date2</i>	<i>Position</i>
<i>2005 and 2006</i>	<i>Different research assistant contracts at the University of Cagliari</i>
<i>02/01/2007 – 18/02/2010</i>	<i>Post-doctoral fellowship at the University of Cagliari, for the project titled “Study and simulation of bioinspired systems-on-chip”</i>
<i>19/02/2010 - 28/12/2011</i>	<i>Research assistant (Young Researchers Grant by Regione Sardegna, PO Sardegna FSE 2007-2013, L.R. 7/2007 “Promotion of the scientific research and technological innovation in Sardinia”) at the Dept. Electrical and Electronic Engineering of the University of Cagliari, for the project “Conception and development of advanced algorithms for real-time extraction of fetal electrocardiogram from non-invasive biopotential recordings”</i>
<i>29/12/2011 to 29/11/2016</i>	<i>Non-tenure assistant professor of Biomedical Engineering, (art. 24 c.3-a L. 240/10), SSD ING-INF/06 – Electronic and Information Bioengineering (09/G2 – Bioengineering), Faculty of Engineering and Architecture, Department of electrical and electronic engineering, University of Cagliari, Italy</i>
<i>Since 2013</i>	<i>Appointed expert for the Department of Electrical and Electronic Engineering in the UNINFO commission (UNI federated agency for the unification in the information technologies and their applications) for the Health Informatics</i>
<i>2013 – 2020</i>	<i>Italian expert for the work group in charge of the revision of the standard EN 1064:2005+A1:2007 Health informatics – Standard communication protocol – Computer-assisted electrocardiography (SCP-ECG)</i>
<i>Since June 2013</i>	<i>Member of the PhD board of the “Bioengineering and Robotics” PhD program</i>

	<i>(University of Genova, Italy)</i>
<i>Since 2015</i>	<i>Italian Expert in the Technical Committee 251 of CEN, Working Group 2</i>
<i>2016 – 2023</i>	<i>Member of the Independent Ethics Committee of the University Hospital of Cagliari as expert (clinical engineering for medical-surgical studies involving medical devices).</i>
<i>30/11/2016 - 20/07/2021</i>	<i>Quality assessment manager for the Biomedical Engineering Course at the University of Cagliari, Italy</i>
<i>30/11/2016 – 29/11/2019</i>	<i>Tenure-track assistant professor of Biomedical Engineering, (art. 24 c.3-b L. 240/10), SSD ING-INF/06 – Electronic and Information Bioengineering (09/G2 – Bioengineering), Faculty of Engineering and Architecture, Department of electrical and electronic engineering, University of Cagliari, Italy</i>
<i>2017 – 2018</i>	<i>Member of the Board of the National Bioengineering Group</i>
<i>2018 – 2021</i>	<i>Member of the Board of Directors of the Italian association National Bioengineering Group (GNB)</i>
<i>2018 – 2022</i>	<i>Co-founder and officer (treasurer) of the IEEE Sensors Council Italy Chapter</i>
<i>2019 – 2021</i>	<i>Italian expert for the work group in charge of the ISO WD 13131 Health Informatics - Telehealth services – Quality planning guidelines</i>
<i>Since Nov 2019</i>	<i>Associate Professor of biomedical engineering (SSD IBIO-01/A - former ING-INF/06) at the Dept. of Electrical and Electronic Engineering, University of Cagliari, Italy</i>
<i>21/07/2021 - 30/06/2024</i>	<i>Vice-Director of the Department of Electrical and Electronic Engineering, University of Cagliari, Italy</i>
<i>July 2022 - May 2024</i>	<i>Member of the PhD board of the “THE HADRON ACADEMY: RISK AND COMPLEXITY IN HIGH TECH MEDICAL INNOVATION” PhD program (I.U.S.S. - Istituto Universitario di Studi Superiori - Pavia, Italy)</i>
<i>Jul 2024 – Oct 2024</i>	<i>Coordinator of the BSc program in Biomedical Engineering, University of Cagliari, Italy</i>
<i>Since Nov 2024</i>	<i>Coordinator of the BSc and MSc program in Biomedical Engineering, University of Cagliari, Italy (including the joint MSc in Biomedical Engineering by University of Cagliari, University of Pavia, and IUSS Pavia)</i>
<i>Since June 2025</i>	<i>Member of the PhD board of the “SCIENCE AND TECHNOLOGY FOR ADVANCED THERAPIES” PhD program (I.U.S.S. - Istituto Universitario di Studi Superiori - Pavia, Italy)</i>

Honors

<i>date</i>	<i>Honour</i>
<i>2024</i>	<i>AIIC AWARDS2024 - Digital Health and Telemedicine: “Progetto RiPARTO: tele-riabilitazione mediante perturbazioni del feedback visivo per l’arto superiore” – Giulia Sedda, Danilo Pani, Giulia Olla, Enrico Ariu, Matilde Farci</i>
<i>2024</i>	<i>AIIC AWARDS2024 - Digital Health and Telemedicine – GIURIA POPOLARE: “Progetto RiPARTO: tele-riabilitazione mediante perturbazioni del feedback visivo per l’arto superiore” – Giulia Sedda, Danilo Pani, Giulia Olla, Enrico Ariu, Matilde Farci</i>
<i>2023</i>	<i>BIODEVICES 2023 - Best poster award for "A Modular BLE-Based Body Area Network Embedded into a Smart Garment for Rescuers Real-Time Monitoring in Emergency Scenarios"</i>
<i>2022</i>	<i>AIIC AWARDS2022 - INNOVAZIONE, PROCESSI, PRODOTTI, SERVIZI: Danilo Pani (Università degli studi di Cagliari) with “Domomea: la teleriabilitazione domiciliare per il paziente post-Ictus”</i>
<i>2019</i>	<i>IEEE Senior member elevation</i>
<i>2018</i>	<i>BIOSIGNALS 2018 – Best poster award per il paper “Adaptive Filtering for Electromyographic Signal Processing in Scoliosis Indexes Estimation”</i>
<i>2016</i>	<i>XVII SIAMOC 2016 Congress – Best methodological work for “Identificazione del centro di rotazione della spalla tramite sensori magneto-inerziali”</i>
<i>2015</i>	<i>DASIP 2015 – Best paper award per l’articolo “Exploring Custom Heterogeneous MPSoCs for Real-Time Neural Signal Decoding”</i>
<i>2013</i>	<i>Biodevices 2014 – Best student paper award (first author: Nicola Carta) for the</i>

	<i>paper “VLSI Wavelet Denoising of Neural Signals, Critical Appraisal of Different Algorithmic Solutions for Threshold Estimation”</i>
2008	<i>Computers in Cardiology 2008 – 35° annual Conference: Best Poster Presentation award to Danilo Pani for the poster related to the paper “A DSP Algorithm and System for Real-Time Fetal ECG Extraction”</i>
2005	<i>ATMEL DSP Design Contest 2005, second prize, “Real-time Blind Source Separation (BSS) of signal mixtures on DIOPSIS 740 platform”.</i>

Patents

<i>Application date</i>	<i>Application Number</i>
28/07/2015	<i>U.S. Patent No. US 9,089,734 B2</i>
06/06/2016	<i>Italian Patent Application No. 102016000057785, WIPO (PCT) WO2017212377A1</i>
07/12/2018	<i>Italian Patent Application No. 102018000010886</i>
29/04/2019	<i>Italian Patent Application No. 102019000006437</i>
14/10/2019	<i>PCT/IB2019/058726</i>
26/06/2023	<i>Italian Patent Application No. 102023000013161</i>

Reviewer Experience

Reviewer for several journals, including IEEE Transactions on Neural Systems & Rehabilitation Engineering, IEEE Transactions on Consumer Electronics, IEEE Journal on Flexible Electronics, IEEE Transactions on Biomedical Engineering, IEEE Journal of Biomedical and Health Informatics, IEEE Transactions on Signal Processing, IEEE Transactions on Biomedical Circuits and Systems, IEEE Transactions on Industrial Informatics, Computer Methods and Programs in Biomedicine, Journal of Telemedicine and Telecare, Computers in Biology and Medicine, Frontiers in Neuroscience, Sensors and actuators A: Physical, and many others (for the most recent ones, <https://publons.com/a/1341228/>). Moreover:

Since 2023 Associate Editor Scientific Data (<https://www.nature.com/sdata/editorial-board>)
Since 2022 Associate Editor IEEE Transactions on Neural Systems and Rehabilitation Engineering – TNSRE (<https://www.embs.org/tnsre/associate-editors/>)
Since 2022 Associate Editor PLOS Digital Health (<https://journals.plos.org/digitalhealth/s/editorial-board>)
2020 - 2023 Associate Editor BMC Cardiovascular Disorders (Springer Nature) (<https://bmccardiovascdisord.biomedcentral.com/about/editorial-board>)
2023 Guest Editor Special issue "Fetal-Maternal Monitoring during Pregnancy and Labor: Trends and Opportunities" MDPI Bioengineering (https://www.mdpi.com/journal/bioengineering/special_issues/D7PZ5CLR41)
2019 Guest Editor Special Issue “ECG Sensors” – MDPI Sensors (https://www.mdpi.com/journal/sensors/special_issues/ECG_Sensors)
2018 Guest Editor Special issue “Wearable Sensors in Healthcare: Methods, Algorithms, Applications” – MDPI Sensors (https://www.mdpi.com/journal/sensors/special_issues/WSHMAA)
2018 Guest Editor Special issue “Computer Methods and Programs in Prenatal Medicine” – Mathematical Biosciences and Engineering – AIMS Press (<http://www.aimspress.com/newsinfo/1126.html>)
2022 Book Editor “Innovative Technologies and Signal Processing in Perinatal Medicine – Vol 2”, Springer Nature (<https://link.springer.com/book/10.1007/978-3-031-32625-7>)
2019 Book Editor “Innovative Technologies and Signal Processing in Perinatal Medicine – Vol 1”, Springer Nature (<https://link.springer.com/book/10.1007/978-3-030-54403-4>)

C. Contributions to Science

(Here you can insert a short description of your contributions to science (max 20 lines) followed by the list of the 10 most significant publications of the last 10 yrs)

Danilo Pani’s research activity focuses on medical devices, biomedical signal processing, and machine learning applied to the medical field. His main areas of expertise include:

- Cardiac electrophysiology and non-invasive fetal ECG
- Wearable electronics and unconventional electrodes for electrophysiological monitoring
- Neural engineering and neuromotor rehabilitation
- Telemedicine and telerehabilitation system design
- Eye-tracking and neurophysiopathological biomarkers

He is widely recognized in the field of non-invasive fetal electrocardiography, having promoted a network of leading scientists and established a set of scientific schools in Sardinia, as well as editing the related books on the topic. He has also played a significant role in the design and characterization of textile electrodes for biopotential monitoring, in collaboration with the partnering laboratory at the University of Cagliari.

A substantial portion of his current projects concerns (neuro)motor telerehabilitation systems, where he has introduced new paradigms and patented methods. Earlier in his career, he participated in national and international research networks on hand neuroprostheses, applying real-time digital system design to enable advanced signal processing and machine learning.

He is the author of approximately 150 indexed publications and 6 patents. Among the last 10-year publications:

- D. Pani, A. Dessì, J. Saenz-Cogollo, G. Barabino, B. Fraboni, A. Bonfiglio, “Fully textile, PEDOT:PSS based electrodes for wearable ECG monitoring systems”, IEEE Transactions on Biomed Engineering, Volume 63, Issue 3, March 2016, Article number 7182320, Pages 540-549, <https://doi.org/10.1109/TBME.2015.2465936>
- D. Pani, G. Barabino, L. Citi, P. Meloni, S. Raspopovic, S. Micera, L. Raffo, “Real-time neural signals decoding onto off-the-shelf DSP processors for neuroprosthetic applications”, IEEE Transactions on Neural Systems and Rehabilitation Engineering, Volume 24, Issue 9, Sept. 2016, pp.993-1002, <https://doi.org/10.1109/tnsre.2016.2527696>
- D. Pani, P. Meloni, G. Tuveri, F. Palumbo, P. Massobrio, L. Raffo, “An FPGA platform for real-time simulation of spiking neuronal networks”, Frontiers in Neuroscience, Feb 28, 2017, vol. 11, pp. 90-102, <https://doi.org/10.3389/fnins.2017.00090>
- D. Pani, I. Usai, P. Cosseddu, M. Melis, G. Sollai, RM. Crnjar, I. Tomassini Barbarossa, I. Raffo, A. Bonfiglio, “An automated system for the objective evaluation of human gustatory sensitivity using tongue biopotential recordings”, Plos ONE, Aug. 2, 2017, 12(8), pp. 1-20, <https://doi.org/10.1371/journal.pone.0177246>
- G. Baldazzi, E. Sulas, M. Urru, R. Tumbarello, L. Raffo, D. Pani, “Wavelet denoising as a post-processing enhancement method for non-invasive foetal electrocardiography” Computer Methods and Programs in Biomedicine, Volume 195, 2020, 105558, <https://doi.org/10.1016/j.cmpb.2020.105558>
- E. Sulas, M. Urru, R. Tumbarello, L. Raffo, R. Sameni, D. Pani, “A non-invasive multimodal foetal ECG–Doppler dataset for antenatal cardiology research”. Scientific Data 8, 30 (2021). <https://doi.org/10.1038/s41597-021-00811-3>
- A. Spanu, A. Botter, A. Zedda, G. L. Cerone, A. Bonfiglio and D. Pani, "Dynamic Surface Electromyography Using Stretchable Screen-Printed Textile Electrodes," in IEEE Transactions on Neural Systems and Rehabilitation Engineering, vol. 29, pp. 1661-1668, 2021, <https://doi.org/10.1109/TNSRE.2021.3104972>
- Baldazzi, G., Orrù, M., Viola, G., Pani D., Computer-aided detection of arrhythmogenic sites in post-ischemic ventricular tachycardia. Sci Rep 13, 6906 (2023). <https://doi.org/10.1038/s41598-023-33866-w>
- Baldazzi G, Sulas E, Vullings R, Urru M, Tumbarello R, Raffo L and Pani D (2023) Automatic signal quality assessment of raw trans-abdominal biopotential recordings for non-invasive fetal electrocardiography. Front. Bioeng. Biotechnol. 11:1059119. <https://doi.org/10.3389/fbioe.2023.1059119>
- Pitzus A, Baldazzi G, Orrù M, Raffo L, Viola G, Djurić PM, Pani D, (2025) Arrhythmogenic sites identification in post-ischemic ventricular tachycardia electrophysiological studies by explainable deep learning, Biomedical Signal Processing and Control, vol. 99, 2025, 106844, <https://doi.org/10.1016/j.bspc.2024.106844>

D. Past and Ongoing Research Support

(Complete the following table with the list of your projects, Add/delete rows if necessary.)

From To	Project Title	Funding Agency	Role in the project
From January 1 st , 2024	“MYRTUS - Multi-layer 360° dYnamic orchestration and interopeRable design	EC, HORIZON-CL4-2023-	Unit coordinator

	environmenT for compute-continUum Systems”	DATA-01-04 - Cognitive Computing Continuum: Intelligence and automation for more efficient data processing (AI, data and robotics partnership) (RIA)	
From February 13, 2023	“COMETA – Hybrid Hub (H2UB): Modelli cellulari e COMputazionali, micro e nanotEcnologie per la personalizzazione di Terapie innovative”	Italian Piano di Sviluppo e Coesione – Salute, Traiettorie 4 “Biotecnologie, bioinformatica e sviluppo farmaceutico”,	Unit coordinator
September 28, 2023	“VISIONARY - Advanced VISual feedback for neurorehabilitaTION systems based on virtuAl RealitY”	MIUR – bando PRIN 2022	PI
September 2025	“VITA – Advanced AI-powered methods for optimal personalized treatment of VentrIcular Tachycardias”	Sardegna Ricerche - Proof of Concept - Valorization of research results in biomedicine	Research team member
From June 10, 2024 to September 30, 2025	“STOPme - Supporting Termination Of stereotyPies in patients with RETT syndrome by advanced ambient intelligence”	PNRR - IIT in the context of the Spoke 2 “- Smart Devices and Technologies for Personal and Remote Healthcare” of the RAISE (Robotics and AI for Socio-economic Empowerment) ecosystem	PI
From February 1, 2019 to August 2022	PON TEX-STYLE ARS01_00996 “Nuovi tessuti intelligenti e sostenibili multi-settoriali per design creativo e stile made-in-Italy”	National Operational Program Research and Innovation 2014 - 2020 (PON 2014-20), managed by the Ministry of University and Research – Area di	Research team member

		specializzazione "Design, creatività e Made in Italy"	
From June 29, 2022 to April 29, 2023	“RiPARTO – Tele-rehabilitation by visual feedback perturbations for the upper limb”	Sardegna Ricerche - Proof of Concept - Valorization of research results in biomedicine	Research team member
From July 1, 2020 to June 30, 2023	“Search & Rescue - Emerging technologies for the Early location of Entrapped victims under Collapsed Structures and Advanced Wearables for risk assessment and First Responders Safety in SAR operations”	H2020-EU.3.7.5	Research team member
From February 22, 2018 to August 21, 2020	“DoMoMEA – Home neuromotor tele- rehabilitation for stroke patients with mild impairment through advanced electronic devices”	Sardegna Ricerche, the POR FESR 2014/2020 – ASSE PRIORITARIO I “RICERCA SCIENTIFICA, SVILUPPO TECNOLOGICO E INNOVAZIONE	PI
From April 1, 2017 to March 31, 2021	“CONVERGENCE – Frictionless Energy Efficient Convergent Wearables for Healthcare and Lifestyle Applications”	ERA-NET – a H2020 instrument	Unit coordinator
2013-2017 (50 months)	“NEBIAS – Neurocontrolled BiDirectional Artificial upper limb and hand prosthesiS”,	EU Seventh Framework Programme, ICT- 2013.9.6 FET Proactive EVLIT	Research team member
From February 1, 2013 to January 31, 2016	“HandBot – Protesi di mano biomeccatroniche dotate di percezione tattile bioispirata, interfacce neurali bi-direzionali e controllo sensori-motorio”	MIUR, PRIN 2011	Research team member
2012 – 2015	“NEMESIS – Neurocontrolled mechatronic prosthesis”	Project of the Health Ministry – Direzione Generale della Ricerca Scientifica e Tecnologica, BANDO GIOVANI RICERCATORI 2009	Research team member
From July 1, 2013 to June 30, 16	“HEREiAM: An interoperable platform for self care, social networking and managing of daily activities at home”	Cofunded by the AAL Joint Programme (REF. AAL-2012-5-064)	Research team member, and WP Leader

		and the following National Authorities and R&D programs in Italy, Romania, Belgium and The Netherlands	
From December 19, 2012"	"ELoRA - Low-power Real-time processing of neural signals for prosthetic aids"	Regional Project, L.R.7/2007 Ricerca di Base, program year 2012	PI
From February 19, 2010 to December 28, 2011	"Conception and development of advanced algorithms for real-time extraction of fetal electrocardiogram from non-invasive biopotential recordings"	Young Researchers Grant by Regione Sardegna, PO Sardegna FSE 2007-2013, L.R.7/2007 "Promotion of the scientific research and technological innovation in Sardinia"	PI
Before 2010	"RE.MO.TO. – Recovery of movement and telemonitoring for rheumatologic patients with hand disability"	Regione Autonoma della Sardegna, L.R.7/2007 Fundamental Research, year 2008	Research team member
Before 2010	"MADNESS Methods for predictAble Design of heterogeNeous Embedded Systems with adaptivity and reliability Support"	EU, FP7, FP7-ICT-248424	Research team member
Before 2010	"FetalHeart"	DISTRICT – POR SARDEGNA 2000-2006 MISURA 3.13 – Research and technological development in the companies and region – 2009	Consultant
Before 2010	"OPENHAND OPEN neuro-prosthetic HAND platform for clinical trials"	MIUR, PRIN2008	Research team member
Before 2010	"ALBA Elaborazione riconfigurabile a bassa dissipazione di potenza per digital signal processing"	MIUR - FAR, D.LGS. 297/1999	Research team member
Before 2010	"SAFEHAND Progettazione e sperimentazione di una protesi di mano cibernetica"	MIUR, PRIN2006	Research team member
Before 2010	"SHAPES, Scalable software Hardware Application Platform for Embedded Systems"	FP6, FP6-IST-26825	Research team member

E. Experience as a research supervisor

4 postdocs

12 PhD students

>200 undergraduates