

**CURRICULUM VITAE**  
of  
**Sara Carcangiu**

**Sara Carcangiu** is an Assistant Professor of Power System Group at the Department of Electrical and Electronic Engineering, DIEE, of the University of Cagliari, UniCa, where she carried out research activities in the Circuit Theory Group from 2006 to 2022.

In 2022 she obtained the National Scientific Qualification to practice as Associate Professor, 09/E1.

**- Training**

She obtained a **degree in Electronic Engineering**, discussing the thesis titled "Low frequency noise measurements on HBTs in InP / InGaAs ", and the **PhD degree** in Applied Electromagnetism in Electrical and Biomedical Engineering, Electronics, Smart Sensors, Nano-Technologies" (XXI cycle) of the University of Pisa in consortium with the University of Cagliari, with the thesis titled "Development of multi-objective optimization methodologies for the optimal design of electromagnetic structures".

In the years 2009-2010, 2012-2015 and 2017-2020 she has been a research fellow at the DIEE of UniCa.

From 2010 to 2012 she was the holder of a research grant financed by the Autonomous Region of Sardinia (Regional Law n.7/2007), with the project entitled: "Development of a system for the exploitation of wind energy in urban areas".

**- Responsibility scientific and editorial**

Review activities for numerous journals (IEEE transactions on Magnetics, Energies, International Journal of Numerical Modelling: Electronic Networks, Devices and Fields, International Journal for Applied Electromagnetics and Mechanics, IEEE Access, Arabian Journal of Geosciences, Iranian Journal of Science and Technology, Transactions of Civil Engineering) and international conferences (International conference on Fundamental and Applied MHD - PAMIR, IEEE International Forum on Research and Technologies for Society and Industry – RTSI, IEEE International Conference on Smart Grids, Green Communications and IT Energy-aware Technologies – ENERGY, International Conference on Computational Science and Its Applications, IEEE Conference on Electromagnetic Field Computation – CEFC).

**- Participation in scientific associations e technical committees**

IEEE Member and IEEE Power & Energy Society Member

**- Main research activities**

Her research activity mainly concerned the following fields: optimization methods of electromagnetic devices and development of parallel computing algorithms, optimization and inversion methods based on neural networks, diagnosis using neural networks, synthesis algorithms of artificial neural networks, development of Bit Loading algorithms for the optimization of the modulated signal within broad band Power Line Communication (PLC) communication systems, study and development of innovative systems for the production of electricity, development of a system for the exploitation of wind energy in urban areas, classification, prediction and avoidance of destructive events and MHD instability in nuclear fusion reactors, signal processing techniques for non-intrusive monitoring of electrical loads.

Her research activity currently focuses on the development of artificial intelligence techniques applied to distribution networks with particular attention to flexibility and participation in distributed resource service markets.

She is co-author of more than 60 scientific papers published in international journals and in the proceedings of international, IEEE and IMEKO, and national conferences.

**- Participation in national and international projects**

PRIN MURST Project: "Integrated Methods and Algorithms for Non-Destructive Diagnostics of Architectural Heritage" – 2006-2007.

PRIN MURST project: "Study and testing of a power line communication system in naval electrical systems" – 2008-2009.

PRIN MURST project: "Non-destructive ultrasound diagnostics using pseudo-orthogonal sequences for imaging and automatic classification of industrial products" – 2010-2012.

Applied research project in the industrial sector entitled "Smart RHC – IoT (Smart Reader-Hub Controller IoT)", POR FESR Sardinia call 2014 – 2020 Axis 1 Action 1.1.3.

Research project "SUM2GRIDS-Solutions by mUltidisciplinary approach for intelligent Monitoring and Management of power distribution GRIDS", two-year University projects financed by the Banco di Sardegna Foundation - Annuality 2017.

Fondazione di Sardegna project "ODIS - Optimization of Distributed systems in the Smart-city and smart-grid settings".

Funded project from the Sardinia Region "RT-NILM (Real-Time Non-Intrusive Load Monitoring for intelligent management of electrical loads)", Call for basic research projects, year 2017, FSC 2014-2020.

Collaboration with the JET research group. The activity involved the development of disruptor predictors and classifiers in the experimental tokamak JET, located at the Culham Centre for Fusion Energy (CCFE) in Abingdon (UK).

Collaboration with the research group of the Culham Centre for Fusion Energy (CCFE). The research activity involved the development of a filament detector for the spherical Tokamak MAST-U located at the CCFE in Abingdon (UK).

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**Publications on SCOPUS - Publications**

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**Teaching activity (Faculty of Engineering and Architecture, University of Cagliari)**

In the academic years 2010-2011 and 2011-2012: contract professor of the course "Automatic Design of Electrical and Magnetic Devices", 60 hours, Master's Degree in Electrical Engineering and in Electronic Engineering.

Teaching activity of the course "Artificial neural networks: theory and applications" (20 hours) at Ph.D. School in Industrial Engineering, UniCA.