

Academic Corner

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In this issue, we interview IEEE SMC member Dr. Antonio Guerrieri. Antonio is a senior researcher at ICAR-CNR (National Research Council of Italy, Institute for High-Performance Computing and Networking). He earned his Ph.D. in Computer Engineering from the University of Calabria, Italy, in 2012. He was previously a researcher at the Telecom Italia WSN Lab in Berkeley, California, and at the Clarity Centre, University College Dublin, Ireland. Dr. Guerrieri has been involved in several research projects and co-founded SenSysCal S.r.l., a University of Calabria spinoff focused on innovative IoT systems. His research interests include wireless sensor and actuator networks, building monitoring and control, smart objects, smart and cognitive environments, and the Internet of Things. He has co-authored over 100 papers in international journals, conferences, and books. He is an Associate Editor of IEEE Transactions on Human-Machine Systems and serves on the editorial boards of journals such as IoT, Cybersecurity and Privacy, Engineering Proceedings, and Sensors. He is an Adjunct Professor at the DIMES department of the University of Calabria.

(1) Please tell us a bit about yourself and your academic/professional background

I graduated in Computer Engineering after a fantastic thesis experience at UC Berkeley, California. During that period, I started working with wireless sensor networks (WSN), focusing on designing frameworks for healthcare and smart building applications. After that, I began my Ph.D. at the University of Calabria (Italy) in “Systems and Computer Engineering,” naturally continuing my research interests and taking advantage of some inspiring periods abroad. My focus then shifted to the Internet of Things, building platforms able to easily collect and process data—first at the edge of networks, and then across what is known as the edge-cloud continuum. Currently, I am a Senior Researcher at the National Research Council (CNR), Italy’s largest research organization. Specifically, I work at the Institute for High Performance Computing and Networking (ICAR-CNR).

(2) Please tell us a bit about your research. What inspired you to follow this field?

My research journey has always combined theory and hands-on experimentation, crossing multiple disciplines. I started by designing, implementing, and testing frameworks specifically conceived for Body Sensor Networks (BSNs) and Wireless Sensor and Actuator Networks (WSANs), particularly within smart building contexts. Over time, I expanded into creating middleware and platforms based on agent- and service-oriented approaches, contributing to advances in smart cyber-physical systems. My work has also embraced Internet of Things (IoT) technologies, edge computing, and various forms of artificial intelligence. Lastly, I’m also working with the aim of bringing such forms of artificial intelligence directly onto devices within the edge-cloud continuum.

Among other things, currently, I’m heavily involved in applying advanced intelligence on top of IoT infrastructures, aiming to create cognitive buildings. I love “playing” with various frontier devices, exploring ways to make buildings smarter and energy-aware.

My inspiration comes from a genuine passion for innovation and technology. The opportunity to work hands-on with cutting-edge gadgets and achieve tangible results has been incredibly rewarding, despite the challenges. Recently, with my research group, we’ve been working on integrating electroencephalography (EEG) sensors for brain-computer interfaces, smart gloves, UWB radars, and haptic suits into cognitive buildings. We’re also experimenting with the integration of these devices and robots, enabling them to act intelligently based on the collected data. Honestly, before embarking on this path, I never imagined becoming a researcher—I just followed my passions, and here I am.

(3) Are there any underexplored opportunities that you find particularly exciting in this field? Where do you see the field going in the next 5-10 years?

Clearly, artificial intelligence is rapidly transforming every aspect of my research. My group and I are actively exploring opportunities to integrate new AI algorithms with the vast amounts of data collected by our devices, creating exciting new synergies.

In the next 5-10 years, I foresee AI becoming fully integrated into daily life, with exponential growth in using devices that generate massive amounts of useful data. This evolution will significantly improve people's everyday lives, particularly benefiting those with disabilities. The continuous advancement of hardware—capable of more sophisticated sensing and processing at the edge—will open significant research and industrial opportunities. Major global players are already investing heavily in advanced AI models combined with specialized hardware. Imagine if, in the future, the selection of everyday hardware expands far beyond smartphones, smartwatches, or augmented reality glasses—this could profoundly reshape our daily experiences.

(4) What advice would you give young researchers entering your field?

To young researchers entering our field, I'd say passion alone isn't enough—though it's crucial. Our field is highly competitive, so you must work hard and remain persistent through both successes and setbacks. It's natural to have ups and downs, but continuously studying, experimenting, and getting your hands dirty with various technologies will open doors. Our field today is particularly promising because recent technological breakthroughs constantly offer new research opportunities.

Another important piece of advice is never to go it alone—join a research group, stay curious about what others are doing, and never shy away from collaborations. Growing alongside others means growing faster and developing important professional relationships that benefit your entire career.

(5) What role has IEEE and IEEE SMC played in your career?

Building upon my previous answer, I really believe that collaboration accelerates personal and professional growth. Establishing connections through shared projects creates relationships that sometimes also transcend professional boundaries and positively influence your career path.

IEEE and IEEE SMC, through their conferences, technical committees, and volunteer roles, have significantly helped me find new collaborations and establish meaningful connections with colleagues sharing similar interests. These connections have truly been invaluable for my professional growth.

(6) Any last words of advice?

Again for the younger, stay curious and resilient. Research is a marathon of small setbacks and occasional breakthroughs; celebrate the breakthroughs, learn from the setbacks, and keep moving.

When you feel stuck, remind yourself of the bigger goal—creating solutions that improve people's lives. This has to be the research, in my opinion.