Raffaele Gravina's Short Bio

Raffaele Gravina was born in Cosenza, Italy on 1982. He received his Master Degree in Computer Science and a PhD Degree in Computer and Systems Engineering from the University of Calabria, Italy, respectively in 2007 and 2012.

In 2007 he spent six months with an under-graduate training program at the Wireless Sensor Networks Lab in Berkeley, California. Between 2008 and 2010 he was employed as researcher at the same Lab with focus on the development of domain-specific frameworks for Wireless Body Sensor Networks (BSNs) and their application on physical activity monitoring and mental stress detection.

Since 2016, he is Assistant Professor at the Department of Informatics, Modellistics, Electronics, and Systemistics of the University of Calabria. Previously, he served for three years as PostDoc research fellow at the same Department with focus on the definition, the development and evaluation of models, methodologies, and middlewares for programming wireless sensor networks and on the development of distributed applications based on such networks.

He is co-founder and CTO of health-care sector at SenSysCal S.r.l., a spin-off of the the University of Calabria, which develops innovative Internet-of-Things and sensor-based systems for e-health and building monitoring.

As of April 2020, he authored more than 70 international publications (24 journals, 40 conferences, 6 book chapters, 1 authored book). In Google Scholar, he has 83 indexed publications (70 on SCOPUS), with a total number of citations equal to 2810 (2089 on SCOPUS) and an H-index equal to 25 (23 on SCOPUS). His top-cited work has 422 citations on Google Scholar (304 on SCOPUS).

In 2018, he received the Sensors MDPI 2017 Outstanding Reviewer Award, in consideration of the quantity, timeliness and quality of submitted reviews.

In 2015, his paper titled "Using Cloud-assisted Body Area Networks to Track People Physical Activity in Mobility" received the Best Paper Award of 10th EAI International Conference on Body Area Networks (BodyNets'15) held in Sydney on September 28-30, 2015.

In 2014, he received the prestigious Andrew P. Sage Best Transactions Paper, for the publication: G. Fortino, R. Giannantonio, R. Gravina, P. Kuryloski, R. Jafari, "Enabling Effective Programming and Flexible Management of Efficient Body Sensor Network Applications", IEEE Transactions on Human-Machine Systems, 43(1), pp. 115-133, 2013.

He is member of the Editorial Board of "Sensors" and "International Journal of Environmental Research and Public Health", MDPI Journals. He is guest editor of the Special Issue on "Human Activity Recognition and Movement Analysis on Smartphones and Personal Devices", Information MDPI and Leading Guest editor of the Special Issue on "Multi-Sensor Fusion in Body Sensor Networks", Sensors MDPI. He was leading guest editor of "Integration, Interconnection, and Interoperability of IoT Systems", Springer Book, Internet of Things Series, guest editor of the Special Issue on "Advances in Multi-Sensor Fusion for Body Sensor Networks: Algorithms, Architectures, and Applications" of the Information Fusion Journal, and guest editor of the Special Issue on "Enhancing Internet and Distributed Computing Systems with Wireless Sensor Networks" of the International Journal of Distributed Sensor Networks.

He serves as reviewer for over 20 international journals.

He served as Program Committee (PC) member in more than 50 international conferences and workshops. He was Co-Chair of the 12th International Conference on Internet and Distributed Computing Systems (IDCS 2019). He was Event Co-Chair of the 11th International Workshop on Multi-Agent Systems and Simulation (MAS&S'17), Special Tracks Chair of the 13th International Conference on Body Area Networks (BodyNets

2018), TPC Chair of the 3rd EAI International Conference on Interoperability in IoT (InterIoT 2017), and Special Sessions Co-Chair of the 14th IEEE International Conference on Networking, Sensing and Control (ICNSC 2017).

In 2014, he was keynote speaker at the 9th International Conference on Body Area Networks (BodyNets 2014) with a keynote titled “From embedded computing frameworks for Body Sensor Networks to Cloud-assisted Body Sensor Networks”.

He is associate member of the Technical Committee on Wearable Biomedical Sensors and Systems (IEEE EMB Society). He is member of IEEE and IEEE SMC Society.

His research activities include high-level programming methodologies and frameworks for BSNs, Collaborative BSN, BSN-Cloud integration, pattern recognition and knowledge discovery algorithms on physiological signals, human activity recognition and motor rehabilitation assistance based on wearable motion sensors, ECG analysis for cardiac monitoring and emotion detection, interoperability on the Internet-of-Things.

On these topics, he collaborated with several international research groups, including:

– Prof. Ruzena Bajcsy, University Of California at Berkeley (collaboration on programming methods for BSN-based systems)

– Prof. Hassan Ghasemzadeh, Washington State University (collaboration on multi-sensor data fusion methods and techniques in the context of BSNs)

– Prof. Roozbeh Jafari, University Of Texas at Dallas (collaboration on signal processing and machine learning algorithms for human physical activity recognition)

– Prof. Wenfeng Li, Wuhan University of Technology, China (collaboration on smart systems supporting the independent mobility of motor impaired users)

– Prof. Edmund Y. W. Seto, School of Public Health, University of Washington, USA (collaboration on wearable-based mHealth)

– Prof. Zhelong Wang, Dalian University of Technology, China (collaboration on human motion capture techniques)

– Prof. Alberto San Giovanni Vincentelli, University Of California at Berkeley (collaboration on embedded systems design methodologies applied to BSNs)

He has been involved in national and international research projects. In the following, the main objectives and results of each project is summarized.

Since 2018 he is involved in the COGITO Project funded by the Italian NOP “Ricerca e Innovazione” 2014-2020 and “Fondo Crescita Sostenibile”. The project focuses on the integration of Internet of Things with dynamic cognitive systems with the aim of improving the management of public and residential buildings with cognitive services.

From 2016 to 2018 he was involved in the INTER-IoT (Internet of Things and Platforms for Connected Smart Objects) Project funded by the UE Horizon 2020 (Call ICT-30-2015). The project is aiming at the design, implementation and experimentation of an open cross-layer framework and associated methodology to provide voluntary interoperability among heterogeneous Internet of Things (IoT) platforms. The overall goal of the INTER-IoT project is to provide an interoperable framework architecture for seamless integration of different IoT architectures present in different application domains. Interoperability will be provided at different levels: device, network, middleware, services and data. His main contributions are related to the

definition and analysis of methods for Middleware Layer Interoperability of IoT platforms and to the definition of design patterns, methodologies, and systematic tools supporting IoT interoperability.

From 2012 to 2015 he was responsible of the AD-PERSONAS (A Customizable Distributed Platform based on Body Sensor Networks for Pervasive and Continuous Monitoring of Assisted Livings) Project, funded by the Italian P.O.N. "Ricerca & Competitivita'" 2007-2013 – Smart Cities and Communities and Social Innovation. AD-PERSONAS is a BSN-based, Cloud-assisted platform for continuous, non invasive monitoring of assisted living in indoor/outdoor mobility.

From 2010 to 2012 he was involved in the CONET (Cooperating Objects Network of Excellence) Project funded by the UE FP7-ICT Program. The main goal of CONET was to build a strong community in the area of Cooperating Objects capable of conducting the needed research to achieve, in the long term, the vision of Mark Weiser. He was specifically involved in the REWSN (Recognizing Emotions using Wireless Sensor Networks) research cluster with the main contribution of studying cooperative techniques among BSNs and WSNs for the recognition of human emotions.

He is involved in the SPINE Project as the main designer and responsible for open-source contributions. SPINE (Signal Processing in Node Environment) is a domain-specific programming framework for supporting rapid prototyping of BSNs applications by providing developers with software instruments and offering great flexibility in the implementation of distributed signal processing algorithms for the analysis and classification of sensor data. The main institutions involved in this project are Telecom Italia Lab, WSN Lab Berkeley sponsored by Telecom Italia, University of California at Berkeley, University of Calabria, University of Texas at Dallas, Tampere University of Technology.

He is also involved in the BodyCloud open-source project. BodyCloud is a distributed software framework for rapid prototyping of large-scale smart-Health BSN-based applications. It is designed as a SaaS architecture to support the storage and management of sensor data streams and the processing and analysis of the stored data using software services hosted in the Cloud. In particular, BodyCloud endeavors to support several cross-disciplinary applications and specialized processing tasks. It enables large-scale data sharing and collaborations among users and applications in the Cloud, and delivers Cloud services via sensor-rich mobile devices. The wearable and mobile software layer of BodyCloud is based on the SPINE framework.

He was involved in the MAPS (Mobile Agent Platform for SUN Spot) open-source project. MAPS is an innovative Java-based framework for WSNs based on Sun SPOT technology which enables agent-oriented programming of WSN applications. The MAPS architecture is based on components which interact through events. Each component offers a minimal set of services to mobile agents which are modeled as multi-plane state machines driven by ECA rules.

He is also member of the Joint Italy/China Project "Smart Personal Mobility Systems for Human Disabilities in Future Smart Cities". In this context, on November 2015 he was visiting researcher at the Wuhan University of Technology in the IoT Lab coordinated by Prof. Wenfeng Li.

Since 2010 he has been charged with teaching activities at the University of Calabria where he was involved as assistant in many courses. More recently, he taught "Laboratory of Computer Science" and "Fundamentals of Computer Science". He was teacher of the course titled "From Modeling to Implementation of Wearable Computing Systems based on Body Sensor Networks" of the PhD Degree in "Information and Communication Technologies" of the University of Calabria on 2017 and 2018.