

2019 IEEE INTERNATIONAL WORKSHOP ON Metrology for Industry 4.0 and IoT

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CALL FOR PAPERS for the Special Session on

MEASUREMENTS AND VIRTUAL MEASUREMENTS FOR INDUSTRY 4.0: APPROACHES AND SOLUTIONS FOR SMART MANUFACTURING

ABSTRACT

Smart manufacturing involves many innovative requirements: a tight connection between physical and digital systems (the cyber-physical world), the capability of managing and processing in nearly real time very huge amount of data (Big Data), the ability of managing production plans in a very flexible way with reference to strongly automated and interconnected production lines (M2M). Further, the interactions between man and machine (H2M) change, to enhance the process/product quality.

All these requirements ask for new approaches for measurement systems and techniques in order to make effective the capability of transforming data into useful information for decision makers. Integration of techniques concerning virtual testing and measurements seems to be very interesting from both a technical and economical point of view.

All the steps of the measurement process are involved: transducer selection and installation, sensor calibration, system modelling and its interaction with sensors, sensor fusion and networking, data acquisition and data processing methods and algorithms, measurement uncertainty modelling and management. Management of measurement systems and validation techniques are also noteworthy in this scenario.

ABOUT THE ORGANIZERS

Giulio D'Emilia is associate professor at DIIE (Department of Industrial Engineering and Informatics and of Economics) of the L'Aquila University (ITALY), where he is responsible of the Labs for mechanical and thermal measurements.

Prof. Giulio D'Emilia is also responsible for L'Aquila University of the project "Lead The future", a national initiative for Sustainability and Society 4.0.

Prof. Giulio D'Emilia and his research group (composed by environmental, mechanical, managerial and information engineers) devote their activity to multidisciplinary and integrated applications.

He is author or coauthor of more than 130 papers published on international and Italian journals, international and national conferences. In these papers the main results of his research activity are described, mainly concerning the development of new sensors, in particular of optical type, sensor integration in industrial scenarios, uncertainty management in complex measurement processes. Case studies are also studied, involving certified management systems for quality, environment, safety, food safety and maintenance and new engineering approaches are deeply studied, like lean manufacturing, six sigma, lean six sigma.

Antonella Gaspari is a research fellow at University of L'Aquila. She graduated in Management Engineering in 2012. In 2014, she spent a study period in Germany managing a research project for sensor-based condition monitoring analyses and applications, in the field of research and development in manufacturing industry, at Fraunhofer IPK (Berlin, Germany). In 2016, she obtained her Ph.D. in Mechanical, Energetic and Industrial Engineering, with specialism in diagnostics, control and environmental and industrial measurements.

Currently, she is involved in projects concerning the development of advanced and innovative measurement techniques. Her main expertise is in the field of sensors calibration, condition monitoring analyses, development of suitable processing techniques for data mining and for measurements and data flows management, with a focus on the validation and uncertainty evaluation in Big Data contexts, for industrial, civil and laboratory applications.

Emanuela Natale graduated in Environmental Engineering in 2000. She has been working as a researcher at the Department of Industrial and Information Engineering and Economics of the University of L'Aquila, since 2001. She got a Ph.D. degree in Mechanical Engineering in 2004.


She is concerned with mechanical, thermal and environmental measurements, with reference to applications of real interest in industrial scenarios.

In the last years her research focuses, in particular, on condition monitoring and diagnostics of industrial systems, uncertainty assessment for complex measuring systems, sensors calibration issues.

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