

2019 IEEE INTERNATIONAL WORKSHOP ON Metrology for Industry 4.0 and IoT

NAPLES, ITALY | JUNE 4 - 6, 2019



CALL FOR PAPERS for the Special Session on

MODELS AND METHODS FOR THE INTEGRATED DESIGN OF SMART MECHANICAL SYSTEMS

ABSTRACT

Nowadays, smart mechanical systems, able to monitor and adapt their functionalities to new requirements, are in greater demand than ever before. In this context, new design paradigms, accurate mathematical models and multi-layered approaches are mandatory to assure the best integration of real-time process monitoring, automatic data processing and adaptive system's response. Remote laser welding technology, collaborative robotics for accurate assembling operations, mechatronic systems and Cyber Physical Systems (CPS) are examples of systems that need for in-process adaptive measurement systems, analysis modules and customized implementations for in-line adjustments and process control. Computer assisted selection of measurement features, dynamic robot programming for vision-based measurement systems are means to improve quality and performances of the systems. The integration of measurements data into design procedure is a challenging topic.

In this context, also the human-robot interaction is essential and the current AR/VR techniques offer several tools for capturing product and process data during the interaction between users and systems.

The special session is then focused on how accomplish the integration of measurement data into models, prototypes and procedures for the optimal design of adaptive mechanical systems.

ABOUT THE ORGANIZERS

Salvatore Gerbino. Ph.D. ('98) in Mech. Eng. 1999-2005 Teaching Professor in the area of Mechanical Drawing and CAD at the University of Naples. Visiting Scholar at MIT (US) for 1 year between 1998-2001, working on tolerance and assembly design. 2005-2018 Associate Professor at the University of Molise (IT). Since Jan 2019 Associate Professor at the University of Campania (IT) working on Design Methods and Tools of Industrial Engineering. He is referee of several international journals and has published about 80 papers in international peer-reviewed journals and conferences. Involved, as main investigator and member, in several national research activities. Involved in the research unit under EU FP7 project (2012-2015) "RLW Navigator". He collaborates also with the Fraunhofer Institute in Chemnitz and Dresden (D), and WMG in Warwick (UK). The main research activities concern CAD/CAE modeling and programming, Assembly and Tolerancing Design of rigid/compliant parts, applications of Reverse Engineering and Machine Vision techniques, and Biomedical Engineering.

Ferdinando Vitolo was born in Salerno, Italy in 1985. He received B.S. and M.S. degrees in mechanical engineering from the University of Naples Federico II, Naples, Italy in 2012. He received the Ph.D degree in industrial engineering from the University of Naples Federico II, Naples, Italy in 2017.

From 2012 to 2014 he was Project Engineer with the Department of Industrial Engineering. Since 2013, he is staff member of IDEAS LAB (www.ideas.unina.it). In 2016, he was Visiting Fellow with WMG, University of Warwick, UK. Since 2017, he has been Research Fellow with Department of Industrial Engineering, University of Naples Federico II, Italy. His research interests include mechanical and mechatronic systems, knowledge-based engineering, robotic task sequencing, collaborative robot, methodologies for advanced CAD modelling, tolerancing, measurement.

NAPLES

Naples is a city on the sea, a place full of light yet with dark, hidden foundations. It has a great cultural and artistic identity which is stamped on the brow of its many museums, castles, churches, squares, narrow streets and archaeological remains. Naples is noted for its rich history, art, culture and gastronomy and, in the modern day, the historic centre of the city is listed by UNESCO as a World Heritage Site.

ORGANIZERS

Salvatore Gerbino

University of Campania Luigi Vanvitelli, Italy

 salvatore.gerbino@unicampania.it

Ferdinando Vitolo

University of Naples Federico II, Italy

 ferdinando.vitolo@unina.it

MORE INFORMATION

 www.metroind40iot.org

 info@metroind40iot.org

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