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WORKSHOP PROGRAM

Monday, June 7

SESSION 1.1 - General Session - PART 1

Room: Virtual Room #1

Chairs: Francesca De Tommasi, *Università Campus Bio-Medico di Roma, Italy*
Carlo Massaroni, *Università Campus Bio-Medico di Roma, Italy*

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Pasquale Arpaia, Università degli Studi di Napoli Federico II, ARHeMLab, CIRMIS, Italy
Luca Callegaro, INRIM - Istituto Nazionale di Ricerca Metrologica, Italy
Alessandro Cultrera, INRIM - Istituto Nazionale di Ricerca Metrologica, Italy
Antonio Esposito, Politecnico di Torino, ARHeMLab, Italy
Massimo Ortolano, Politecnico di Torino, INRIM, Italy

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Timo Hämäläinen, Faculty of Information Technology University of Jyväskylä, Finland

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Loredana Cristaldi, DEIB, Politecnico di Milano, Italy
Marco Faifer, DEIB, Politecnico di Milano, Italy
Emil Petkovski, DEIB, Politecnico di Milano, Italy
Luigi Piegari, DEIB, Politecnico di Milano, Italy
Sergio Toscani, DEIB, Politecnico di Milano, Italy

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Daniele Mattia, Energy@Work, Italy
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Giuseppe Rocco Rana, Energy@Work, Italy
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Marina Mongiello, Polytechnic University of Bari, Italy

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Mario Selvaggio, University of Naples Federico II, Italy
Stefano Debei, University of Padova, Italy
Sebastiano Chiodini, University of Padova, Italy
Egidio De Benedetto, University of Naples Federico II, Italy
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Antonio Lanzotti, University of Naples Federico II, Italy

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Enrico Petritoli, Università degli Studi Roma Tre, Italy
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Giuseppe Schirripa Spagnolo, Università degli Studi Roma Tre, Italy

SESSION 1.2 - SPECIAL SESSION: Industry 4.0 and IoT for the Hospital of the Future - Part I

Room: Virtual Room #2

Chairs: Sergio Silvestri, *University Campus Bio-Medico of Rome, Italy*
Leandro Pecchia, *University of Warwick, UK*

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Selenia Marino, Bambino Gesù Children's Hospital, Italy
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Fabio Fuiano, Roma TRE University, Italy
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Maurizio Schmid, Roma TRE University, Italy
Jan Galo, IRCCS Children Hospital Bambino Gesù, Italy
Silvia Conforto, Roma TRE University, Italy
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Aytac Durmaz, Boğaziçi University Biomedical Engineering Institute, Turkey
Altay Brusan, Boğaziçi University Biomedical Engineering Institute, Turkey
Koksal Kurt, Pievision Technology, Turkey
Cengizhan Ozturk, Boğaziçi University Biomedical Engineering Institute, Turkey

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SESSION 1.3 - SPECIAL SESSION: Measurements and Virtual Measurements for Industry 4.0: Approaches and Solutions for Smart Manufacturing - PART I

Room: Virtual Room #3

Chairs: Giulio D'Emilia, *University of L'Aquila, Italy*
Antonella Gaspari, *Polytechnic of Bari, Italy*
Emanuela Natale, *University of L'Aquila, Italy*

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Anton Milov, Reshetnev Siberian State University of Science and Technology, Russia
Vadim Tynchenko, Reshetnev Siberian State University of Science and Technology, Russia
Sergei Kurashkin, Reshetnev Siberian State University of Science and Technology, Russia
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Iuliia Kim, ITMO University, Russia
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Room: Virtual Room #1
Chairs: Davide Brunelli, *University of Trento, Italy*
Elisabetta Farella, *Fondazione Bruno Kessler, Italy*

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Eleonora Bilotta, University of Calabria, Italy
Domenico Luca Carnì, University of Calabria, Italy
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Pietro Pantano, University of Calabria, Italy
Carmelo Scuro, University of Calabria, Italy
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Davide Brunelli, University of Trento, Italy
Andrea Acquaviva, University of Bologna, Italy

SESSION 2.2 - SPECIAL SESSION: Industry 4.0 and IoT for the Hospital of the Future - Part II

Room: Virtual Room #2
Chairs: Sergio Silvestri, *University Campus Bio-Medico of Rome, Italy*
Leandro Pecchia, *University of Warwick, UK*

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Maria Stella Ricci, University Campus Bio-Medico of Rome, Italy
Andrea Lozupone, University Campus Bio-Medico of Rome, Italy
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Francesco Maria Di Matteo, University Hospital Campus Bio-Medico of Rome, Italy
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Sara Moccia, Scuola Superiore Sant'Anna, Italy
Federico Bianchi, Industry 4.0 Competence Center, ARTES4.0, Italy
Gastone Ciuti, Scuola Superiore Sant'Anna, Italy
Arianna Menciassi, Scuola Superiore Sant'Anna, Italy
Lorenzo Capineri, Università degli Studi di Firenze, Italy
Calogero Maria Oddo, Scuola Superiore Sant'Anna, Italy

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Salvatore Castorina, *University of Catania, Italy*

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Salvatore Baglio, University of Catania, Italy
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Ruben Crispino, University of Catania, Italy
Carl J. Debono, University of Malta, Malta
Dario C. Guastella, University of Catania, Italy
Vincenzo Marletta, University of Catania, Italy
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Giuseppe Sutera, University of Catania, Italy
Matthew Sacco, University of Malta, Malta
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Mauro Serpelloni, University of Brescia, Italy
Andrea Ponzoni, National Research Council, University of Brescia, Italy

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Nicola D'Uva, Radio6ense srl, Italy
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Simone Nappi, Radio6ense srl, University of Rome Tor Vergata, Italy
Carolina Miozzi, Radio6ense srl, University of Rome Tor Vergata, Italy
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Emilio Sardini, University of Brescia, Italy
Mauro Serpelloni, University of Brescia, Italy

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Room: Virtual Room #1
Chairs: Daniela Lo Presti, *Università Campus Bio-Medico di Roma, Italy*
Cátia Leitão, *University of Aveiro, Portugal*
Daniele Tosi, *Nazarbayev University, Kazakhstan*
Taesung Kim, *School of Mechanical Engineering, South Korea*

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Francesca De Tommasi, Università Campus Bio-Medico di Roma, Italy
Carlo Massaroni, Università Campus Bio-Medico di Roma, Italy
Agostino Iadicicco, University of Naples "Parthenope", Italy
Eliodoro Faiella, Università Campus Bio-Medico di Roma, Italy
Massimiliano Carassiti, Università Campus Bio-Medico di Roma, Italy
Rosario Francesco Grasso, Università Campus Bio-Medico di Roma, Italy
Emiliano Schena, Università Campus Bio-Medico di Roma, Italy
Stefania Campopiano, University of Naples "Parthenope", Italy

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Sara Pettinato, "Niccolò Cusano" University, Italy
Daniele Barettin, "Niccolò Cusano" University, Italy
Armando Piccardi, "Niccolò Cusano" University, Italy
Gennaro Salvatore Ponticelli, "Niccolò Cusano" University, Italy
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Martina Zaltieri, Università Campus Bio-Medico di Roma, Italy
Rosaria D'amato, ENEA Research Center of Frascati, Italy
Michele Caponero, ENEA Research Center of Frascati, Italy
Carlo Massaroni, Università Campus Bio-Medico di Roma, Italy
Emiliano Schena, Università Campus Bio-Medico di Roma, Italy

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Carlo Massaroni, Università Campus Bio-Medico di Roma, Italy
Emiliano Schena, Università Campus Bio-Medico di Roma, Italy
Massimiliano Carassiti, Università Campus Bio-Medico di Roma, Italy

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Alexandre Carvalho, University of Aveiro, Portugal
Florinda M. Costa, University of Aveiro, Portugal
Carlos Marques, University of Aveiro, Portugal
Cátia Leitão, University of Aveiro, Portugal

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Pasquale Di Palma, University of Naples "Parthenope", Italy
Agostino Iadicicco, University of Naples "Parthenope", Italy
Stefania Campopiano, University of Naples "Parthenope", Italy

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SESSION 3.2 - SPECIAL SESSION: Sensors and Techniques for Sport and Physical Activity

Room: Virtual Room #2

Chairs: Andrea Nicolò, *University of Rome "Foro Italico", Italy*
Elena Bergamini, *University of Rome "Foro Italico", Italy*
Carlo Massaroni, *Università Campus Bio-Medico di Roma, Italy*

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Lorenzo Nuti, Università di Pisa, Italy
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Andrea Mannini, Scuola Superiore Sant'Anna, Italy

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Valentina Camomilla, IuC-BoHNeS, University of Rome "Foro Italico", Italy
Antonio Pallotti, Technoscience, University of Rome "Tor Vergata", Italy

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Amaranta Soledad Orejel Bustos, University of Rome "Foro Italico", Italy
Massimo Sacchetti, University of Rome "Foro Italico", Italy

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Massimo Sacchetti, University of Rome "Foro Italico", Italy

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Joshua Di Tocco, Università Campus Bio-Medico di Roma, Italy
Carlo Massaroni, Università Campus Bio-Medico di Roma, Italy
Umile Giuseppe Longo, Università Campus Bio-Medico di Roma, Italy
Emiliano Schena, Università Campus Bio-Medico di Roma, Italy
Vincenzo Denaro, Università Campus Bio-Medico di Roma, Italy

SESSION 3.3 - SPECIAL SESSION: Intelligence in Infrastructures

Room: Virtual Room #3

Chairs: Alessandro Massaro, *Dyrecta Lab srl, Italy*

Tuesday, June 8

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Room: Virtual Room #1
Chairs: Marco Tarabini, *Politecnico di Milano, Italy*

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Chiara Conese, Politecnico di Milano, Italy
Maurizio Colombo, One-Off Solution - Automation Software Services, Italy
Luca Maggioni, Politecnico di Milano, Italy
Giovanni Moschioni, Politecnico di Milano, Italy
Marco Tarabini, Politecnico di Milano, Italy

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Luigi Garibaldi, Politecnico di Torino, Italy
Luca Bonmassar, Agilent Technologies Italia Spa

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Fabio Conti, Politecnico di Milano, Italy
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Alessandro Zavalloni, GDM SpA, Italy
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Stefan Marr, GFE, Germany
Sebastian Uziel, IMMS GmbH, Germany
Silvia Krug, IMMS GmbH, Germany

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Francesco La Mura, Università degli Studi di Pavia, Italy
Marco Tarabini, Politecnico di Milano, Italy
Mattia Camnasio, Todeschini Mario s.r.l., Italy

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Room: Virtual Room #2
Chairs: Susanna Spinsante, *Università Politecnica delle Marche, Italy*
Grazia Iadarola, *University of Sannio, Italy*
Gloria Cosoli, *Università Politecnica delle Marche, Italy*
Angelica Poli, *Università Politecnica delle Marche, Italy*

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Alfredo Rosado-Munoz, University of Valencia, Spain
Lotfi Mostefai, Dr Moulay Tahar University of Saida, Algeria

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Gian Marco Revel, Università Politecnica delle Marche, Italy
Lorenzo Scalise, Università Politecnica delle Marche, Italy

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Juri Taborri, University of Tuscia, Italy
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Annalisa Orrico, Politecnico di Milano, Italy
Sanzhar Korganbayev, Politecnico di Milano, Italy
Martina De Landro, Politecnico di Milano, Italy
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Grazia Iadarola, University of Sannio, Italy
Angelica Poli, Marche Polytechnic University, Italy
Susanna Spinsante, Marche Polytechnic University, Italy

SESSION 4.3 - SPECIAL SESSION: Gender-Inspired Approaches to the Design of Innovative Measurement Systems and IoT Applications

Room: Virtual Room #3

Chairs: Paola Saccomandi, *Politecnico di Milano, Italy*
Cristina Emilia Costa, *Fondazione Bruno Kessler, Italy*
Monica La Mura, *University of Salerno, Italy*
Dajana Cassioli, *University of L'Aquila, Italy*
Patrizia Lamberti, *University of Salerno, Italy*

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Valentina Perricone, University of Campania "Luigi Vanvitelli", Italy
Daria Cermola, University of Campania "Luigi Vanvitelli", Italy
Flavia Mastroberardino, University of Campania "Luigi Vanvitelli", Italy
Roberta Gragnano, University of Campania "Luigi Vanvitelli", Italy
Giovanni Di Palma, Presidio Ospedaliero Busto – Arsizio, Italy

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Adriana Re, Politecnico di Milano, Italy
Paolo Volonté, Politecnico di Milano, Italy
Alberto Antonio Zanini, Freelance professional
Serena Graziosi, Politecnico di Milano, Italy
Maria Laura Costantino, Politecnico di Milano, Italy

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Marco Bravi, Università Campus Bio-Medico di Roma, Italy
Sandra Miccinilli, Università Campus Bio-Medico di Roma, Italy
Emiliano Schena, Università Campus Bio-Medico di Roma, Italy
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Monica La Mura, University of Salerno, Italy
Rumiana Kotsilkova, Bulgarian Academy of Sciences, Bulgaria
Vladimir Georgiev, Bulgarian Academy of Sciences, NanoTechLab Ltd., Bulgaria
Vincenzo Tucci, University of Salerno, Italy

SESSION 5.3 - SPECIAL SESSION: Metrology for Data Interoperability in Industry 4.0

Room: Virtual Room #3
Chairs: Blair Hall, *Measurement Standards Laboratory of New Zealand, New Zealand*
Sascha Eichstädt, *Physikalisch-Technische Bundesanstalt, Germany*
Mark Kuster, *Consultant*
Michael Schwartz, *CalLab Solutions*

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Sascha Eichstädt, Physikalisch-Technische Bundesanstalt, Germany

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Tuukka Mustapää, Aalto University School of Engineering, Finland
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Raine Viitala, Aalto University School of Engineering, Finland

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Maximilian Gruber, Physikalisch-Technische Bundesanstalt, Germany
Sascha Eichstädt, Physikalisch-Technische Bundesanstalt, Germany
Adrian Paschke, Freie Universität Berlin, Fraunhofer FOKUS, Germany

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Bernd Müller, Ostfalia University of Applied Sciences, Germany
Gianfranco Miele, University of Cassino and Southern Lazio, Italy
Tuukka Mustapää, Aalto University School of Engineering, Finland
Daniel Hutzschenreuter, Physikalisch-Technische Bundesanstalt, Germany
Clifford Brown, Physikalisch-Technische Bundesanstalt, Germany
Oksana Baer, Physikalisch-Technische Bundesanstalt, Germany

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Jovan Vujasinović, University of Belgrade, Serbia
Goran Savić, University of Belgrade, Serbia
Ilija Batas - Bjelic, Institute of Technical Sciences of the Serbian Academy of Sciences and Arts, Serbia
Nikola Rajaković, University of Belgrade, Serbia

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Mark Kuster, Consultant

SESSION 6.1 - SPECIAL SESSION: AI-Enhanced Sensing for Industrial and Medical IoT Applications - Part I

Room: Virtual Room #1
Chairs: Luca Vollero, *University Campus Bio-Medico of Rome, Italy*
Samuel Oluwarotimi Williams, *Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, China*

SESSION 6.2 - SPECIAL SESSION: Measurements and Sensors for Safety and Wellness of Workers

Room: Virtual Room #2

Chairs: Carla Fanizza, *DITSPIA, INAIL, Italy*
Maria Sabrina Sarto, *DIAEE, CNIS, Sapienza University of Rome, Italy*
Marco Di Rienzo, *IRCCS Fondazione Don Carlo Gnocchi, Italy*
Enzo Pasquale Scilingo, *University of Pisa, Italy*
Fabio Di Francesco, *University of Pisa, Italy*

Wednesday, June 9

SESSION 7.1 - SPECIAL SESSION: Zero Defect Manufacturing - Part I

Room: Virtual Room #1

Chairs: Daniela Kirchberger, *PROFACTOR GmbH, Austria*
Christian Eitzinger, *PROFACTOR GmbH, Austria*
Raul Poler, *CIGIP - Universitat Politècnica de València, Spain*

449 **The ROBxTASK architecture for interoperability of robotic systems**
Georg Weichhart, PROFACTOR GmbH, Austria
Andreas Pichler, PROFACTOR GmbH, Austria
Felix Strohmeier, Salzburg Research Forschungsgesellschaft mbH, Austria
Mathias Schmoigl, Salzburg Research Forschungsgesellschaft mbH, Austria
Helmut Zörrer, PROFACTOR GmbH, Austria

454 **Industrial Data Services for Quality Control in Smart Manufacturing – the i4Q Framework**
Anastasios Karakostas, Centre for Research and Technology Hellas, Greece
Raul Poler, Universitat Politècnica de València, Spain
Francisco Fraile, Universitat Politècnica de València, Spain
Stefanos Vrochidis, Centre for Research and Technology Hellas, Greece

458 **Deep learning for zero-defect inkjet-printing of electronics**
Flaig Minnette, PROFACTOR GmbH, Austria
Zambal Sebastian, PROFACTOR GmbH, Austria

464 **Multi-tenant Data Management in Collaborative Zero Defect Manufacturing**
Francisco Fraile, Universitat Politècnica de València, Spain
Leticia Montalvillo, Industrial Cybersecurity IKERLAN, Spain
María Ángeles Rodríguez, Universitat Politècnica de València, Spain
Héctor Navarro, Universitat Politècnica de València, Spain
Ángel Ortiz, Universitat Politècnica de València, Spain

SESSION 7.2 - SPECIAL SESSION: Wearable Sensors and Devices for Unobtrusive Physiological Monitoring - Part I

Room: Virtual Room #2

Chairs: Carlo Massaroni, *Università Campus Bio-Medico di Roma, Italy*
Wei Gao, *California Institute of Technology, USA*
Alessandro Zompanti, *Università Campus Bio-Medico di Roma, Italy*
Giorgio Pennazza, *Università Campus Bio-Medico di Roma, Italy*

469 **Metrological Characterization of a new textile sensor for temperature measurements and a comparison with a Pt100 sensor**
Giorgia Mazzini, University of Florence, Italy
Lorenzo Capineri, University of Florence, Italy
Andrea Zanobini, University of Florence, Italy
Riccardo Marchesi, Knitronix srl, Italy

473 **Wearable system for elbow angles estimation based on a polymer encapsulated conductive textile**
Joshua Di Tocco, Università Campus Bio-Medico di Roma, Italy
Arianna Carnevale, Università Campus Bio-Medico di Roma, Italy
Marco Bravi, Università Campus Bio-Medico di Roma, Italy
Umile Giuseppe Longo, Università Campus Bio-Medico di Roma, Italy
Silvia Sterzi, Università Campus Bio-Medico di Roma, Italy
Carlo Massaroni, Università Campus Bio-Medico di Roma, Italy
Emiliano Schena, Università Campus Bio-Medico di Roma, Italy

478 **Wearable Sensor based on Fiber Bragg Grating with Flexible Polymer for Squat Exercise**
Dongjoo Shin, Sungkyunkwan University, Republic of Korea
Taesung Kim, Sungkyunkwan University, Republic of Korea

482 **An accurate and stable bed-based ballistocardiogram measurement and analysis system**
Niccolò Mora, University of Parma, Italy
Federico Cocconcelli, University of Parma, Italy
Guido Matrella, University of Parma, Italy
Giovanni Chiorboli, University of Parma, Italy
Paolo Ciampolini, University of Parma, Italy

SESSION 7.3 - SPECIAL SESSION: Additive Manufacturing for Industry 4.0

Room: Virtual Room #3
Chairs: Eduardo Palermo, *Sapienza University of Rome, Italy*
Ilaria Mileti, *Sapienza University of Rome, Italy*
Livio D'Alvia, *Sapienza University of Rome, Italy*

488 **Microwave characterization of Polyamide 6 Graphene Nanoplatelet Composites**
Erika Pittella, Pegaso University, Italy
Emanuele Piuzzi, Sapienza - University of Rome, Italy
Pietro Russo, Institute for Polymers, Composites and Biomaterials IPCB-CNR, Italy
Francesco Fabbrocino, Pegaso University, Italy

493 **FEM deformation analysis of a transtibial prosthesis fed with gait analysis data: A preliminary step towards restoring proprioception in amputees**
Francesco Castelli Gattinara Di Zubiena, Sapienza University of Rome, Italy
Federica Perugini, Sapienza University of Rome, Italy
Marco Germanotta, IRCCS Fondazione Don Carlo Gnocchi, Italy
Irene Aprile, IRCCS Fondazione Don Carlo Gnocchi, Italy
Gabriele Cortis, Sapienza University of Rome, Italy
Zaccaria Del Prete, Sapienza University of Rome, Italy
Eduardo Palermo, Sapienza University of Rome, Italy

499 **Reproducibility and Embedding Effects on Static Performace of 3D Printed Strain Gauges**
Ilaria Mileti, University Niccolò Cusano, Italy
Luca Cortese, Sapienza University of Rome, Italy
Zaccaria Del Prete, Sapienza University of Rome, Italy
Eduardo Palermo, Sapienza University of Rome, Italy

505 **Uncertainty assessment techniques for selective laser melting process control**
Gennaro Salvatore Ponticelli, University Niccolò Cusano, Italy
Simone Venettacci, University Niccolò Cusano, Italy
Flaviana Tagliaferri, University Niccolò Cusano, Italy
Oliviero Giannini, University Niccolò Cusano, Italy
Fabrizio Patanè, University Niccolò Cusano, Italy
Stefano Guarino, University Niccolò Cusano, Italy

SESSION 8.1 - SPECIAL SESSION: Zero Defect Manufacturing - Part II

Room: Virtual Room #1
Chairs: Daniela Kirchberger, *PROFACTOR GmbH, Austria*
Christian Eitzinger, *PROFACTOR GmbH, Austria*
Raul Poler, *CIGIP - Universitat Politècnica de València, Spain*

510 **Smart Digital Twin for ZDM-based job-shop scheduling**
Julio César Serrano Ruiz, Universitat Politècnica de València, Spain
Josefa Mula Bru, Universitat Politècnica de València, Spain
Raúl Poler Escoto, Universitat Politècnica de València, Spain

SESSION 8.2 - SPECIAL SESSION: Wearable Sensors and Devices for Unobtrusive Physiological Monitoring - Part I

Room: Virtual Room #2

Chairs: Carlo Massaroni, *Università Campus Bio-Medico di Roma, Italy*
Wei Gao, *California Institute of Technology, USA*
Alessandro Zompanti, *Università Campus Bio-Medico di Roma, Italy*
Giorgio Pennazza, *Università Campus Bio-Medico di Roma, Italy*

SESSION 8.3 - General Session - PART II

Room: Virtual Room #3

Chairs: Joshua Di Tocco, *Università Campus Bio-Medico di Roma, Italy*

556 **Missing data imputation in meteorological datasets with the GAIN method**
Marina Popolizio, Politecnico di Bari, Italy
Alberto Amato, Politecnico di Bari, Italy
Tiziano Politi, Politecnico di Bari, Italy
Roberto Calienno, Università Giustino Fortunato, Italy
Vincenzo Di Lecce, Politecnico di Bari, Italy

561 **Metrological Characterization of Measurement Systems through Monte Carlo Simulations, Design of Experiments and Robotic Manipulation**
Davide Maria Fabris, Politecnico di Milano, Italy
Alice Meldoli, Politecnico di Milano, Italy
Remo Sala, Politecnico di Milano, Italy
Paolo Salina, Giorgi Engineering, Italy
Marco Tarabini, Politecnico di Milano, Italy

566 **Microfluidic arena for high-throughput C. elegans calcium imaging experiments with multiple strain confinement**
Enrico Lanza, Istituto Italiano di Tecnologia, Italy
Davide Caprini, Istituto Italiano di Tecnologia, Italy
Valeria Lucente, Istituto Italiano di Tecnologia, Italy
Viola Folli, Istituto Italiano di Tecnologia, Italy

572 **A WAMS emulation framework for the characterization of measurement algorithms on electrical transmission networks**
Annalisa Liccardo, University of Naples Federico II, Italy
Salvatore Tessitore, Terna Rete Italia, Italy
Cosimo Pisani, Terna Rete Italia, Italy
Francesco Bonavolontà, University of Naples Federico II, Italy
Salvatore Cacciapuoti, University of Naples Federico II, Italy
Giorgio Maria Giannuzzi, Terna Rete Italia, Italy

SESSION 9.1 - SPECIAL SESSION: Sensors, measurement systems and methods for in-line control, safety and security

Room: Virtual Room #1

Chairs: Alessandro Schiavi, *INRiM - National Institute of Metrological Research, Italy*
Ada Fort, *University of Siena, Italy*

578 **Towards large-scale calibrations: a statistical analysis on 100 digital 3-axis MEMS accelerometers**
Andrea Prato, INRiM – National Institute of Metrological Research, Italy
Fabrizio Mazzoleni, INRiM – National Institute of Metrological Research, Italy
Francesca R. Pennecchi, INRiM – National Institute of Metrological Research, Italy
Gianfranco Genta, Politecnico di Torino, Italy
Maurizio Galetto, Politecnico di Torino, Italy
Alessandro Schiavi, INRiM – National Institute of Metrological Research, Italy

583 **NO2 photoacoustic sensing system based on resonant cell and UV-LED sensor**
Ada Fort, University of Siena, Italy
Enza Panzardi, University of Siena, Italy
Valerio Vignoli, University of Siena, Italy
Elia Landi, University of Siena, Italy
Marco Mugnaini, University of Siena, Italy
Klaus Stefan Drese, Coburg University of Applied Sciences and Arts, Germany

588 **Quasi-Real Time Remote Video Surveillance Unit for LoRaWAN-based Image Transmission**
Ada Fort, University of Siena, Italy
Giacomo Peruzzi, University of Siena, Italy
Alessandro Pozzebon, University of Siena, Italy

SESSION 9.2 - SPECIAL SESSION: AI-Enhanced Sensing for Industrial and Medical IoT Applications - Part II

Room: Virtual Room #2
Chairs: Luca Vollero, *University Campus Bio-Medico of Rome, Italy*
Samuel Oluwarotimi Williams, *Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, China*

625 **A New Multilabel System for Automatic Music Emotion Recognition**
Fabio Paolizzo, University of Rome Tor Vergata, Italy
Natalia Pichierri, University of Rome Tor Vergata, Italy
Daniele Giardino, University of Rome Tor Vergata, Italy
Marco Matta, University of Rome Tor Vergata, Italy
Daniele Casali, University of Rome Tor Vergata, Italy
Giovanni Costantini, University of Rome Tor Vergata, Italy

SESSION 9.3 - SPECIAL SESSION: Measurement Systems in the Industrial IoT era

Room: Virtual Room #3
Chairs: Ivanovitch Silva, *Federal University of Rio Grande do Norte, Brazil*
Dennis Brandão, *Universidade de São Paulo, Brazil*
Paolo Ferrari, *University of Brescia, Italy*

630 **Impact of Usage Profiles on Remaining Useful Life and Post-Prognostic Maintenance Decisions**
Roberto Bodo, Università degli Studi di Padova, Italy
Matteo Bertocco, Università degli Studi di Padova, Italy
Alberto Bianchi, Carel Industries SPA, Italy

636 **Towards fixtureless robotic in-line measurement assisted assembly, a case study**
Victor Azamfirei, Malardalen University, Sweden
Anna Granlund, Malardalen University, Sweden
Yvonne Lagrosen, Malardalen University, Sweden
William J. Palm, Robotdalen, Sweden

642 **An Unsupervised TinyML Approach Applied for Pavement Anomalies Detection Under the Internet of Intelligent Vehicles**
Pedro Andrade, Federal University of Rio Grande do Norte, Brazil
Ivanovitch Silva, Federal University of Rio Grande do Norte, Brazil
Gabriel Signoretti, Federal University of Rio Grande do Norte, Brazil
Marianne Silva, Federal University of Rio Grande do Norte, Brazil
Joao Dias, Federal University of Rio Grande do Norte, Brazil
Lucas Marques, Federal University of Rio Grande do Norte, Brazil
Daniel G. Costa, State University of Feira de Santana, Brazil

648 **MSensorMob: A Multi-Sensors Hardware Framework to Support the Development of Adaptable Monitoring Units in Mobile Applications**
Franklin Oliveira, State University of Feira de Santana, Brazil
Daniel G. Costa, State University of Feira de Santana, Brazil
Ivanovitch Silva, Federal University of Rio Grande do Norte, Brazil
Pedro Andrade, Federal University of Rio Grande do Norte, Brazil
Anfranserai Dias, State University of Feira de Santana, Brazil

654 **RFID based Predictive Maintenance System for Chemical Industry**
Simone Nappi, University of Rome Tor Vergata & Radio6ense srl, Italy
Sara Amendola, University of Rome Tor Vergata & Radio6ense srl, Italy
Marco Ramacciotti, ISE srl, Italy
Edoardo Zambonini, ISE srl, Italy
Nicola D'Uva, Radio6ense srl, Italy
Francesca Camera, University of Rome Tor Vergata, Italy
Carolina Miozzi, University of Rome Tor Vergata, Italy
Cecilia Occhiuzzi, University of Roma Tor Vergata & DICII, Italy
Gaetano Marrocco, University of Rome Tor Vergata, Italy

SESSION 10.1 - SPECIAL SESSION: Wireless Solutions for IoT-based Measurements over Wide Areas

Room: Virtual Room #1
Chairs: Emiliano Sisinni, *University of Brescia, Italy*
Diego Silva, *Federal University of Rio Grande do Norte, Brazil*

Federico Tramarin, *University of Modena and Reggio Emilia, Italy*

659 **A real-time MCU-based wireless system for remote monitoring of PV devices**
Antonino Laudani, Roma Tre University, Italy
Valentina Lucaferri, Roma Tre University, Italy
Martina Radicioni, Roma Tre University, Italy
Francesco Riganti Fulginei, Roma Tre University, Italy

665 **Turning old into new: adding LoRaWAN connectivity to PLC in brownfield installations**
Paolo Ferrari, University of Brescia, Italy
Emiliano Sisinni, University of Brescia, Italy
Paolo Bellagente, University of Brescia, Italy
Alessandro Depari, University of Brescia, Italy
Dhiego Fernandes Carvalho, University of Brescia, Italy
Alessandra Flammini, University of Brescia, Italy
Marco Pasetti, University of Brescia, Italy
Stefano Rinaldi, University of Brescia, Italy

671 **Adaptive LoRaWAN Transmission exploiting Reinforcement Learning: the Industrial Case**
Tommaso Fedullo, University of Padova, Italy
Alberto Morato, University of Padova, Italy
Federico Tramarin, University of Modena and Reggio Emilia, Italy
Paolo Bellagente, University of Brescia, Italy
Paolo Ferrari, University of Brescia, Italy
Emiliano Sisinni, University of Brescia, Italy

677 **IoT framework with flexible management of multi-protocol nodes for redundancy applications**
Diego Silva, Universidade Federal do Rio Grande do Norte, Brazil
Vinicius S. S. Lima, Federal University of Rio Grande do Norte, Brazil
Hudson B. M. Alves, Federal University of Rio Grande do Norte, Brazil
Rafael N Cunha, Universidade Federal do Rio Grande do Norte, Brazil
Emiliano Sisinni, University of Brescia, Italy
Paolo Ferrari, University of Brescia, Italy

SESSION 10.2 - SPECIAL SESSION: Measurements and Virtual Measurements for Industry 4.0: Approaches and Solutions for Smart Manufacturing

Room: Virtual Room #2
Chairs: Giulio D'Emilia, *University of L'Aquila, Italy*
Antonella Gaspari, *Polytechnic of Bari, Italy*
Emanuela Natale, *University of L'Aquila, Italy*

682 **Edge-enabled cloud computing management platform for smart manufacturing**
Jeffrey Ying, Caloudi Corporation, Taiwan
Jackie Hsieh, Caloudi Corporation, Taiwan
Dennis Hou, Caloudi Corporation, Taiwan
Janpu Hou, Caloudi Corporation, Taiwan
Tuo Liu, Yuanjie Semiconductor Technology, China
Xiaobin Zhang, Yuanjie Semiconductor Technology, China
Yuxi Wang, Yuanjie Semiconductor Technology, China
Yen-Ting Pan, Yuanjie Semiconductor Technology, China

687 **Managing the sampling rate variability of digital MEMS accelerometers in dynamic calibration**
Giulio D'Emilia, University of L'Aquila, Italy
Antonella Gaspari, Politecnico di Bari, Italy
Emanuela Natale, University of L'Aquila, Italy
Andrea Prato, INRiM - National Institute of Metrological Research, Italy
Fabrizio Mazzoleni, INRiM - National Institute of Metrological Research, Italy
Alessandro Schiavi, INRiM - National Institute of Metrological Research, Italy

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SESSION 10.3 - SPECIAL SESSION: Cybersecurity Standards and Technologies for IoT and Industry 4.0 (SecurityStandards)

Room: Virtual Room #3

Chairs: Alan Oliveira de Sá, *Admiral Wandenkolk Instruction Center, Brazil*
Lucila Maria de Souza Bento, *Inmetro, Brazil*