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Chairs: Francesco Riganti Fulginei, *Universita' Degli Studi Roma Tre, Italy*
Riccardo Scorretti, *L'ecole Centrale de Lyon, France*

10:30 | Invited

Daniele Bibbo, *Rome Tre University, Italy*
Silvia Conforto, *University of Roma Tre, Italy*
Antonimo Laudani, *University of Roma Tre, Italy*
Gabriele Maria Lozito, *Roma Tre University, Italy*

Abstract: In this paper, the research towards the implementation of a prototype helmet for cyclists equipped with a distributed array of PV cells is presented. The work aims to create a power supply, either independent or auxiliary, for smart and wearable sensors. The implemented prototype has been characterized both in a controlled environment and on the field to assess the amount of generated useful energy. The system proposed in this paper can be used to produce energy to supply a smart sensor based device placed on the helmet; as an application, this could be used to send an alarm in case of an accident occurred to a cyclist, without placing heavy or dangerous battery on the head of the final user.

11:00

Alessandro Formisano, *Universita' degli Studi della Campania Luigi Vanvitelli, Italy*
Andrea Gaetano Chiariello, *Universita' degli Studi della Campania Luigi Vanvitelli, Italy*
Raffaele Martone, *Universita' degli Studi della Campania Luigi Vanvitelli, Italy*

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Hari Rimal, *University of Perugia, Italy*
Antonio Faba, *University of Perugia, Italy*

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Maurizio Paschero, *Polo for Sustainable Mobility- Rome, Italy*
Rosanna Pinto, *ENEA, Italy*
Emanuele Marchionne, *University of Rome- La Sapienza, Italy*
Antonello Rizzi, *University of Rome- La Sapienza, Italy*
Fabio Massimo Frattale Mascioli, *La Sapienza University of Roma, Italy*

11:45

Vincenzo Bonaiuto, *University of Roma Tor Vergata, Italy*
Fausto Sargeni, *Universita di Roma Tor Vergata, Italy*

12:00

Monday 11, September 16:30 – 18:00, P2.2 Building 25
M2 | Electric and Magnetic Devices for Smart Mobility Applications (II)
Chairs: Francesco Riganti Fulginei, *Universita' Degli Studi Roma Tre, Italy*
Riccardo Scorretti, *L'ecole Centrale de Lyon, France*

16:30 | Invited

Abstract: A procedure for the optimization of the bit loading in a PLC system implementing OFDM modulation is presented. The optimization strategy aims to find the best compromise between the conflicting objectives of minimal Signal Power, maximal Bit Rate, and minimal Bit Error Rate. The optimization is performed off line by means of a Multi-Objective approach. A set of Pareto solutions is determined, among which the designer has to take the final choice on the basis of the custom requirements. The approach is used to optimize the communication within a distributed energy storage system, which exploits an available electrical car fleet. The power lines supplying the charging points are used for the communication, while the information concerns, for each car, the identification code, the charge state, the schedule of charging/discharging. A unique OFDM modulation is used to dialogue with the whole cars fleet, so that it has to be optimized taking into account the frequency response of all the involved power lines.

17:00

17:15

17:30

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Tuesday 12, September 8:30 – 10:15, P2.2 Building 25
M3 | Advanced Remote Sensing Methord for a Smarter and Safer World (I)
Chairs: Antonio Iodice, *University of Napoli Federico II*

10:00

Stefano Moretty, *University of Bergamo, Italy*
Fabio Previdi, *University of Bergamo, Italy*
Fabio Todeschini, *E-Novia, Italy*
Andrea Testa, *E-Novia, Italy*

Tuesday 12, September 11:00 – 12:30, P2.2 Building 25
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Chairs: Antonio Iodice, *University of Napoli Federico II*

11:00 | Invited
A new look at maritime applications using multi-polarization SAR..... ..... Not Available At The Time of Production
Maurizio Migliaccio, *Universita' di Napoli Parthenope, Italy*

Abstract: Leading-edge enabling technologies have been specifically developed to design, build, and operate new generation SARs that guarantee flexible, multi-mode and multi-polarization acquisitions. However, a remote sensing system is not meant just for the space community as it has the capability to provide new value-added products, i.e., applications and enhanced operational services that when based on remotely sensed measurements can provide useful information for Earth Observation (EO) purposes. In this talk, the unique opportunities provided by new high-performance multi-polarization SARs in the context of maritime applications are reviewed. The main message is that, once a proper em model is available, multi-polarization SAR measurements offer an unprecedented level of scattering information on the observed scene that make possible an "intelligent" processing of the remotely sensed measurements aimed at providing simple and user-friendly output that can be used by non-expert users and policy-makers.

11:30

Emanuele Ferrentino, *University of Napoli Parthenope, Italy*
Ferdinando Nunizata, *University of Napoli Parthenope, Italy*
Maurizio Migliaccio, *Universita' di Napoli Parthenope, Italy*

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Gerardo Di Martino, *University of Napoli Federico II, Italy*
Antonio Iodice, *University of Napoli Federico II, Italy*

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Domenico Velotte, *German Aerospace Center, DLR, Germany*
Bjorn Tings, *German Aerospace Center, DLR, Germany*
Carlos Bentes, *Technische Universität München, Germany*

12:15

Alessio Di Simone, *University of Naples, Federico II, Italy*
Antonio Iodice, *University of Napoli Federico II, Italy*
Daniele Riccio, *University of Naples Federico II, Italy*
Hyuk Park, *Universitat Politècnica de Catalunya, Spain*
Adriano Camps, *Universitat Politècnica de Catalunya, Spain*

Wednesday 13, September 8:00 – 10:30, P2.2 Building 25
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Rita Cucchiara, University of Modena and Reggio Emilia, Italy

Technical Sessions: Track 2 | Industry 4.0

Monday 11, September 10:30 – 12:30, P2.3 Building 25
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Roberto Minerva, *EIT Digital*
Marco di Felice, *University of Bologna, Italy*
Luciano Bononi, *University of Bologna, Italy*

10:30

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Cristian Secchi, *University of Modena and Reggio Emila, Italy*
Mosè Gallo, *Telematic University Pegaso, Italy*

Tuesday 12, September 11:00 – 12:45, P2.3 Building 25
I3 | Laser Manufacturing (I)
Chairs: Annamaria Cucinotta, *University of Parma, Italy*
Luca Vincetti, *University of Modena and Reggio Emila, Italy*

11:00 | Invited
Inhibited Coupling Fibres for High Power Ultra Fast Laser Beam Delivery……Not Available At the Time of Production
Luca Vincetti, *University of Modena and Reggio Emilia, Italy*
Fetah Benabid, *University of Limoges, France*

Abstract: Free space beam delivery has long been the only option to transport high energy and/or ultra-short laser pulses. The more robust and flexible technique to deliver laser beams based on conventional optical fibres suffers from pulse-energy upper limit due to the intrinsic catastrophic material damage of the silica and short pulse temporal distortion. Recently a new king of hollow core fibres named Inhibited Coupling (IC) fibres has been proposed. These novel IC fibres exhibit broadband transmission, ultra-low dispersion, and a strongly reduced optical overlap with the surrounding silica allowing to overcome most of the limits of solid conventional optical fibres. In this paper, we report on the latest results on the employment of IC to deliver high-power ultra-short laser pulses.

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Tuesday 12, September 14:30 – 16:00, P2.3 Building 25
I4 | Laser Manufacturing (II)
Chairs: Annamaria Cucinotta, *University of Parma, Italy*
Luca Vincetti, *University of Modena and Reggio Emila, Italy*

14:30 | Invited
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Danijela Rostohar, *HiLASE & HiLASE, Czech Republic*

Abstract: Despite obvious benefits to fatigue behave of Laser Shock Peened components, this technology is still only apply in very limited cases in aviation and nuclear power industry. Limited number of lasers suitable for this treatment, their cost, size and working conditions are most limiting factor. In this paper will be proposed a new approach in the laser architecture which should overcome mentioned limitations of existing laser sources and as a consequence enable wider application of Laser Shock Peening.

15:00
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Alessio Califano, *OPI Photonics SRL, Italy*
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Andrea Braglia, *OPI Photonics SRL, Italy*
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Jan Madl, *Czech Technical University in Prague, Czech Republic*
Jan Kaufman, *HiLASE, Czech Republic*
Danijela Rostohar, *HiLASE & HiLASE, Czech Republic*
Zdenek Pitrmuc, *Czech Technical University in Prague, Czech Republic*
Tomas Mocek, *HILASE Project, Institute of Physics AS CR, Czech Republic*

Wednesday 13, September 8:30 – 10:00, P2.3 Building 25
I5 | Digital Fabrication & Digital Manufacturing (I)
Chairs: Domenico Asprone, *University of Napoli Federico II*

8:30 | Invited
Additive manufacturing: from prototypes to products.....Not Available At Time of Production
Ferdinado Auricchio, *University of Pavia, Italy*
Simona Marconi, *University of Pavia, Italy*

Abstract: Additive manufacturing, also known as 3D printing, is a disruptive technology that is spreading in many different fields, changing both design, distribution chains and economical paradigms. Additive manufacturing is formally defined as the process of joining materials to make objects from 3D virtual models, usually layer upon layer, as opposed to subtractive manufacturing methodologies. Additive manufacturing was born as a prototyping technology, confining its application only to the production of single or at least few copies of the final product, with the aim of evaluating its esthetic features and/or its functionality and then proceed to the manufacturing with traditional technologies. Thanks to the great evolution that materials and technologies knew in the last few years, additive manufacturing started to spread also as a production technology in many fields. Applications cover a wide range, moving from mechanics to civil engineering, architecture, medicine, food industry and many other fields.

9:00

Bartolomeo Coppola, *University of Salerno, Italy*
Nicola Cappetti, *University of Salerno, Italy*
Luciano Di Maio, *University of Salerno, Italy*
Paola Scarfato, *University of Salerno, Italy*
Loredana Incarnato, *University of Salerno, Italy*

9:15

Sara Coppola, *Institute of Applied Sciences & Intelligent Systems "E. Caianiello", Italy*
Giuseppe Nasti, *ISASI CNR, Italy*
Veronica Vespini, *ISASI CNR, Italy*
Federico Olivieri, *ISASI CNR, Italy*
Vito Pagliarulo, *ISASI CNR, Italy*
Simonetta Grilli, *ISASI CNR, Italy*
Pietro Ferraro, *ISASI CNR, Italy*

9:30

Domenico Caputo, *University of Napoli Federico II, Italy*
Paolo Aprea, *University of Napoli Federico II, Italy*
Nicola Gargiulo, *University of Napoli Federico II, Italy*
Barbara Liguori, *University of Napoli Federico II, Italy*

9:45

Paolo Cicconi, *Università Politecnica delle Marche, Italy*
Anna Costanza Russo, *Università Politecnica delle Marche, Italy*
Michele Germani, *Università Politecnica delle Marche, Italy*
Mariorosario Prist, *Università Politecnica delle Marche, Italy*
Emanuele Pallotta, *Università Politecnica delle Marche, Italy*
Andrea Monteriù, *Università Politecnica delle Marche, Italy*

Wednesday 13, September 11:00 – 13:00, P2.3 Building 25
I6 | Digital Fabrication & Digital Manufacturing (II)
Chairs: Leopoldo Angrisani, *University of Napoli Federico II*

11:00 | Invited
Design for Additive Manufacturing: Trends and Opportunities .....Not Available At Time of Production
Antonio Lanzotti, *University of Naples Federico II, Italy*
Massimo Martorelli, *University of Naples Federico II, Italy*

Abstract: Additive Manufacturing (AM) techniques offer several technical and economic benefits compared to traditional manufacturing processes. They have the capability to produce complex and intricate shapes that are not feasible with traditional manufacturing processes.

The geometric freedoms associated with AM provide new possibilities for the part design. Associated to topology optimization techniques and other methods able to generate complex shapes (e.g. three-dimensional lattices structures with specific mechanical, thermal, optical, and biological properties, used to produce high stiffness low weight structures), AM techniques, potentially, allow to save time, material and costs.

Although AM can be considered a convenient alternative to conventional manufacturing processes, it is agreed that parts should be redesigned for AM according to the new design guidelines of ISO/ASTM 52910:2017 and not simply reproduced using an AM process.

This study presents the trends and the opportunities offered by Design for Additive Manufacturing (DfAM). It explores issues related to design and redesign for direct and indirect AM fabrication in different fields of application, highlighting the need for the development of DfAM expertise and education.

11:30

Fabrizia Caiazzo, *University of Salerno, Italy*
Vittorio Alfieri, *University of Salerno, Italy*
Gaetano Corrado, *University of Salerno, Italy*
Paolo Argenio, *University of Salerno, Italy*

11:45

Antonino Squillace, *University of Naples Federico II, Italy*
Andrea El Hassanin, *University of Naples Federico II, Italy*
Antonello Astarita, *University of Naples Federico II, Italy*
Carla Velotti, *University of Naples Federico II, Italy*
Fabio Scherillo, *University of Naples Federico II, Italy*
Luigi Carrino, *University of Naples Federico II, Italy*

12:00

Costantino Menna, *University of Naples, Federico II, Italy*
Leopoldo Angrisani, *University of Naples Federico II, Italy*
Domenico Asprone, *University of Naples, Federico II, Italy*
Francesco Fabbrocino, *Università Pegaso, Italy*
Francesco Bonavolontà, *University of Napoli Federico II, Italy*
Rosario Schiano Lo Moriello, *University of Napoli Federico II, Italy*
Luca Gallucci, *University of Naples Federico II, Italy*

12:15

Rheological features of geopolymer systems for 3D-printed sustainable concrete.....N/A

Claudio Ferone, *University of Naples Parthenope, RILEM Member, INSTM, Italian Society of Ceramic, Italy*
Francesco Messina, *University of Naples Parthenope, RILEM Student Member, INSTM, Italian Society of Ceramics, Italy*
Giuseppina Roviello, *University of Napoli Parthenope, Italy*
Raffaele Cioffi, *University of Naples Parthenope, RILEM Member, INSTM, Italian Society of Ceramic, Italy*
Laura Ricciotti, *University of Napoli Parthenope, Italy*

Technical Sessions: Track 3 | Smart Healthcare

Monday 11, September 10:30 – 12:15, P2.1 Building 25
H1 | Advances in Medical Informatics for Health Care Applications (I)
Chairs: Silvana Quaglini, *University of Pavia, Italy*

10:30 | Invited
The Value of Variety: Methods, strategies and architectures to deal with the most intriguing "V" of Biomedical big data ..... Not Available At Time of Production
Riccardo Bellazzi, *University of Pavia, Italy*

Abstract: Biomedical research and clinical practice have become in the last 20 years "data intensive" fields, thus giving Biomedical informatics a progressively central role. A key aspect of biomedical data is represented by their "variety", i.e. the diversity of data types available that requires different knowledge and approaches to manage and interpret them. Being able to take advantage of variety can be a crucial enabling factor for translational and clinical research, as well as for a more effective care of patients. The talk will report some recent research efforts to deal with variety and discuss some experiences carried on at the University of Pavia, Italy, ranging from the definition of IT architectures and infrastructures to the design and implementation of novel data analytics algorithms, oriented to data integration and fusion.

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Toni Valls Mataró, *Association Trescucarachas, Italy*
Alberto Cabri, *David Chiossone Onlus, Italy*
Carlo Traverso, *Universita' di Genova, Italy*
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Enea Parimbelli, *University of Pavia, Italy*
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12:00
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Giulia Marelli, *Polytechnic of Milan, Italy*
Carolina Muñoz, *Universidad de San Buenaventura, Colombia*
Piero Brambilla, *Azienda Regionale Emergenza Urgenza - AREU, Italy*
Giovanni Sesana, *Azienda Regionale Emergenza Urgenza - AREU, Italy*
Andrea Pagliosa, *Azienda Regionale Emergenza Urgenza - AREU, Italy*
Maria Brovelli, *Polytechnic of Milan, Italy*
Enrico G Caiani, *Polytechnic of Milan, Italy*

Monday 11, September 16:30 – 18:15, P2.1 Building 25
H2 | Advances in Medical Informatics for Health Care Applications (II)
Chairs: Roberto Tagliaferri, *University of Salerno, Italy*

16:30 | Invited
Modeling Care Pathways through BPMN and DMN .....Not Available At Time of Production
Carlo Combi, *University of Verona, Italy*

Abstract: Business Process (BP) technology has emerged as one of the leading technologies in modeling, redesigning, and executing organisational processes in many different application domains. Among them, the representation and management of care pathways have been attracting a growing interest. Care pathways refer to planning and coordination of care processes related to specific groups of patients in a given setting. The goal in defining and following care pathways is to improve the quality of care in terms of patient satisfaction, costs reduction, and medical outcome. Thus, care pathways are a promising methodological tool for standardizing care and decision-making. Business process management techniques can successfully be used for representing organizational aspects of care pathways in a standard, readable, and accessible way, whilst supporting process development, analysis, and re-engineering. In this talk, I will discuss some methodological issues related to the integrated design of care pathways and related decisions, while considering proper representation and management of organizational and clinical information. I will discuss how Business Process Model and Notation (BPMN) and Decision Model and Notation (DMN) can be combined for supporting intertwined aspects of decision-intensive care pathways. As a proof-of-concept the proposed methodology has been applied to design care pathways related to Chronic Obstructive Pulmonary Disease (COPD) in the region of Veneto, in Italy.

17:00
Detection and Management of Side Effects in Patients with Head and Neck Cancer
Elisa M Zini, *University of Pavia, Italy*
Giordano Lanzola, *University of Pavia, Italy*
Silvana Quaglini, *University of Pavia, Italy*

17:15
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Natalia Viani, *University of Pavia, Italy*
Valentina Tibollo, *IRCCS Istituti Clinici Scientifici Maugeri, Pavia, Italy*
Carlo Napolitano, *IRCCS Istituti Clinici Scientifici Maugeri, Pavia, Italy*
Silvia Priori, *IRCCS Istituti Clinici Scientifici Maugeri, Pavia, Italy*
Riccardo Bellazzi, *University of Pavia, Italy*
Lucia Sacchi, *University of Pavia, Italy*

17:30
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Chiara Di Vece, *Polytechnic of Milan, Italy*
Filippo Bracco, *Polytechnic of Milan, Italy*
Luca Cerina, *Polytechnic of Milan, Italy*
Marco D Santambrogio, Polytechnic of Milan & MIT, Italy

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Luigi Rovati, *University of Modena and Reggio Emilia, Italy*

Tuesday 12, September 8:30 – 10:30, P2.3 Building 25
H3 | Neural and Cognitive Engineering
Chairs: Annamaria Cucinotta, *University of Parma, Italy*
Luca Vincetti, *University of Modena and Reggio Emila, Italy*

8:30 | Invited
Computational modelling of non-invasive brain stimulation for neural and cognitive engineering..... Not Available at Time of Production
Paolo Ravazzani, *Consiglio Nazionale delle Ricerche, Institute of Electronics, Computer and Telecommunication Engineering IEIIT CNR, Milano, Italy*

Abstract: Brain neuronal activity can be modulated by non-invasive brain stimulation (NIBS), via electric currents induced by an externally generated electric or magnetic field. NIBS is now considered an elective tool for the diagnosis of central motor pathway damages, for neurorehabilitation from brain injuries and a treatment option for pain, psychiatric, neurodegenerative and cognitive disorders. Despite this, NIBS is under-investigated in relation to other clinical interventions, particularly for what concerns the knowledge about the actual distributions of the electric fields and current densities induced in the target brain areas. This paper aims to address these issues, boosting the translation of computational bio-electromagnetics approaches into valuable information for diagnosis and therapy.

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Valeria Gazzola, *Netherlands Institute for Neuroscience, The Netherlands*
Judith Suttrup, *University of Amsterdam, The Netherlands*
Paolo Ravazzani, *CNR, Italy*
Marta Parazzini, *IEIIT CNR, Italy*

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Paola Corradini, *University of Modena and Reggio Emilia, Italy*
Todd Schuett, *Kongsberg Norcontrol, Norway*
Sergio Fonda, *University of Modena and Reggio Emilia, Italy*

Tuesday 12, September 8:30 – 10:30, P2.1 Building 25
H4 | Services, Applications and Solutions to Challenging Problems in Smart Healthcare
Chairs: Sonia Bergamaschi, *University of Modena and Reggio Emilia, Italy*
Agusti Solanas, *Rovira i Virgili University, Spain*

8:30 | Invited

Agusti Solanas, *Rovira i Virgili University, Spain*
Fran Casino, *Universitat Rovira i Virgili, Spain*
Edgar Batista, *Rovira i Virgili University, Spain*
Robert Rallo, *Pacific Northwest National Laboratory, USA*

Abstract: Smart Healthcare is a relatively new context-aware healthcare paradigm influenced by several fields of knowledge, namely medical informatics, communications and electronics, bioengineering, ethics and so on. Thus, many challenging problems are related to smart healthcare but in many cases they are explored individually in their respective fields and, as a result, they are not always known by the smart healthcare research community working in more specific domains. The aim of this article is to identify some of the most relevant trends and research lines that are going to affect the smart healthcare field in the years to come. To do so, the article considers a systematic approach that classifies the identified research trends and problems according to their appearance within the data life cycle, this is, from the data gathering in the physical layer (lowest level) until their final use in the application layer (highest level). By identifying and classifying those research trends and challenges, we help to pose questions that the smart healthcare community will need to address. Consequently, we set a common ground to explore important problems in the field, which will have significant impact in the years to come.

Wednesday 13, September 11:00 – 13:00, P2.1 Building 25
H5 | E-Health and Personalised Medicine (I)
Chairs: Sergio Cerutti, *Polytechnic of Milano, Italy*
Enzo Pasquale Scilingo, *University of Pisa, Italy*

11:00 | Invited
Linking Excellence in Biomedical knowledge and Computational Intelligence Research for Peronalized Management .....Not Available At Time of Production
Paulo de Carvalho, *University of Coimbra, Portugal*

Abstract: In order to handle the challenges induced by the chronic disease burden, the EU health systems are undergoing a paradigm shift from reactive care to preventive care and from in-hospital to home care. Prevention systems support and motivate users in adopting healthy lifestyles in order to prevent or delay manifestations of disabling chronic diseases. Disease management systems handle the care of patients with chronic disease, combining expertise from different areas, and integrating new technologies to offer the patient better and more cost effective care. In this context, personalizing health and care systems (PHC) have a central role in supporting the paradigm shift by assisting in the provision of continuous and personalised services to empower patients and professionals in managing their health. Today's personal health systems miss adequate integration of clinical evidence and knowledge from holistic clinical practice and biomedical research required to support truly holistic management of chronic diseases and their co-morbidities. Current solutions are designed using the "one fits all" principal lacking a truly personalization/precision by capturing and adapting to the patients' phenotype and individualized treatment or context needs. Data processing is at the core of personal health where acquired data is turned into meaning and action. In order to pave the way from personal to personalised systems, PHC require intelligent algorithms to treat and correct data obtained from uncontrolled conditions, to efficiently integrate multimodal and multi-scale data, to be self-adapting (moving from population-based to patient-specific adaptations) and interpretable, and to integrate clinical and biomedical evidence at their genesis. In this talk the goal is to introduce and discuss the LiNK approach, i.e., a strategy outlined to link competences in intelligent processing in order to create a research ecosystem to address two central scientific and technical challenges for PHC deployment: (1) infusion of clinical evidence biomedical knowledge in PHC solutions and (2) moving PHC solutions from personal to personalized services, i.e., services adapted to the specific user needs and characteristics.

Wednesday 13, September 14:30 – 16:30, P2.1 Building 25
H6 | E-Health and Personalised Medicine (II)
Chairs: Sergio Cerutti, *Polytechnic of Milano, Italy*
Paulo de Carvalho, *University of Coimbra, Portugal*

14:30 | Invited
Central and autonomic nervous system dynamics multiperceptual affective elicitation ..... Not Available At Time of Production
Enzo Pasquale Scilingo, *University of Pisa, Italy*

Abstract: The talk will focus on exploring central and autonomic nervous system dynamics for the assessment of mood and emotional states. Several concepts, some of which are currently sparse over different manuscripts, will be illustrated in order to bring out a clear breakthrough in the field of affective computing, mood assessment, biomedical engineering, biomedical signal processing, and data acquisition. Some personalized methodologies able to characterize the affective state of a subject by means of the analysis of a wide spectrum of central (EEG) and peripheral biosignals such as Heart Rate Variability, Electrodermal Response, Respiration Activity, Eye Gaze information, will be described. Moreover, these patterns of biosignals are processed during the presentation of affective stimuli conveyed through different perceptual channels, i.e. visual, auditory, tactile and olfactory, pointing out the crucial role of nonlinear dynamics and the strict interconnection between brain and heart.

15:00
Robust Carotid Pulse Detection Using Accelermetry and Electrocardiography 469
Bernardo Silva, *Universidade de Coimbra, Portugal*
Jens Muehlsteff, *Philips Research, The Netherlands*
Ricardo Couceiro, *Universidade de Coimbra, Portugal*
Jorge Henriques, *University of Coimbra, Portugal*
Christiane Peiker, *UKE Eppendorf University Hospital Hamburg, Italy*
Christian Meyer, *UKE Eppendorf University Hospital Hamburg, Germany*
Paulo Carvalho, *University of Coimbra, Portugal*

15:15
On the viability of ECG features for seizure anticipation on long-term data 473
Adriana Leal, *University of Coimbra, Portugal*
Maria Ruano, *University of Algarve, Portugal*
Jorge Henriques, *University of Coimbra, Portugal*
Paulo Carvalho, *University of Coimbra, Portugal*
César Teixeira, *University of Coimbra, Portugal*

15:30
Measuring autonomic involvement related to seizure onset in Focal Cortical Dysplasia Type II 478
Anna M. Bianchi, *Polytechnic of Milan, Italy*
Anna Dabraio, *Polytechnic of Milan, Italy*
Stefania Coelli, *Polytechnic of Milan, Italy*
Lino Nobili, *Ospedale Niguarda, Milano, Italy*
Chiara Campana, *Ospedale Niguarda, Milano, Italy*
Annalisa Rubino, *Ospedale Niguarda, Milano, Italy*

15:45
Recognition of Affective Haptic Stimuli Conveyed by different Fabrics using EEG-based Sparse SVM 482
Alberto Greco, *University of Pisa, Italy*
Mimma Nardelli, *University of Pisa, Italy*
Matteo Bianchi, *University of Pisa, Italy*
Gaetano Valenza, *University of Pisa, Italy*
Enzo Pasquale Scilingo, *University of Pisa, Italy*

16:00
Bioimpedance sensing in wearable systems: from hardware integration to model development
Stefano Rossi, *STMicroelectronics, Italy*
Chiara Mancarella*, University of Siena, Italy*
Chiara Mocenni*, University of Siena, Italy*
Luigi Della Torre, *STMicroelectronics, Italy*

16:15
HUGenomics: a support to personalized medicine research
Lorenzo Di Tucci*, Polytechnic of Milan, Italy*
Giulia Guidi*, Polytechnic of Milan, Italy*
Sara Notargiacomo*, Polytechnic of Milan, Italy*
Luca Cerina*, Polytechnic of Milan, Italy*
Alberto Scolari*, Polytechnic of Milan, Italy*
Marco D Santambrogio*, Polytechnic of Milan & MIT, Italy*

Wednesday 13, September 8:30 – 10:25, P2.1 Building 25
H7 | Big Data Integration and IoT for Smart Health Care
Chairs: Giovanni Simonini, *University of Modena and Reggio Emilia, Italy*

8:30 | Invited
Atrial fibrillation: what technologies for a clinical screening?.....Not Available At Time of Production
Giuseppe Boriani, *University of Modena and Reggio Emilia, Italy*

Abstract: Atrial fibrillation is a disease, associated with adverse outcomes (stroke, heart failure, death), with an increasing prevalence that will result in 2030 in Europe in around 15 million subjects affected and 200,000 new cases per year. Atrial fibrillation can be asymptomatic in up to 40% of cases but its detection, even if asymptomatic, is crucial for instituting antithrombotic prophylaxis for preventing stroke. This work is focused on the analysis of data from patients with and without atrial fibrillation aiming to evaluate cheap monitoring tools (using devices designed for area of wellness) as well as medical certified devices, coupled with mHealth Apps, and assess the potential clinical performance of “low cost” strategies for detecting atrial fibrillation, in comparison with the gold standard of continuous electrocardiographic (ECG) monitoring, which is a sophisticated and costly tool.

8:50
My Smart Age with HIV: an innovative mobile and IoMT framework for patient’s empowerment
Eleonora Losiouk*, University of Pavia, Italy*
Giordano Lanzola*, University of Pavia, Italy*
Alfonso Galderisi*, University of Padova, Italy*
Daniele Trevisanuto*, University of Padova, Italy*
Garry Steil*, Harvard Medical School, USA*
Andrea Facchinetti*, University of Padova, Italy*
Claudio Cobelli*, University of Padua, Italy*

Abstract: Healthcare as we know it is in the process of going through a massive change - from episodic to continuous, from disease focused to wellness and quality of life focused, from clinic centric to anywhere a patient is, from clinician controlled to patient empowered, and from being driven by limited data to 360- degree, multimodal personal-public-population physical-cyber- social big data driven. While ability to create and capture data is already here, the upcoming innovations will be in converting this big data into smart data through contextual and personalized processing such that patients and clinicians can make better decisions and take timely actions for augmented personalized health. This paper outlines current opportunities and challenges, with a focus on key AI approaches to make this a reality. The broader vision is exemplified using three ongoing applications (asthma in children, bariatric surgery, and pain management) as part of the Kno.e.sis kHealth personalized digital health initiative

Wednesday 13, September 11:00 – 13:00, P2.1 Building 25
H8 | Data-driven prevention and intervention for Health
Chairs: Sergio Cerutti, *Polytechnic of Milano, Italy*
Paolo Paolini, *Polytechnic of Milano, Italy*

11:00 | Invited
Health Prevention for the Aging Population in Smart Cities: the City4Age Project **532**
Paolo Paolini, *Polytechnic of Milano, Italy*

Abstract: Identifying behavior changes that may lead to critical or pre-critical conditions is the goal of prevention in case of "mild" diseases like MCI and frailty. The session calls for papers that deal with all connected aspects, like: modelling of the behaviors to monitor and/or influence; technologies for prevention and intervention and their deployment; use of data from smart-cities; socio-economic aspects of prevention/intervention via technologies; persuasion and intervention to modify negative behaviors; how to provide the medical staff with qualitative information, etc.

11:30
Technology-enhanced intervention fostering behaviour changes **538**
Nicoletta Di Blas, *Polytechnic of Milan, Italy*
Paolo Paolini, *Polytechnic of Milan, Italy*
Diego Peruselli, *HOC-LAB Polytechnic of Milan, Italy*
Giulia Plotti, *HOC-LAB Polytechnic of Milan, Italy*

11:45
An Architecture for Combining open-data with sensors' dta for effective prevention of MCI and Frailty in elderly people **544**
Silvia de los Rios, *Universidad Politecnica de Madrid, Spain*
Miguel Paramo Castrillo, *Universidad Politecnica de Madrid, Spain*
Patricia Abril-Jimenez, *Universidad Politecnica de Madrid, Spain*
Juan Montalva, *Universidad Politécnica de Madrid, Spain*
Maria Fernanda Cabrera-Umpierrez, *Life Supporting Technologies; Technical University of Madrid, Spain*
Maria Teresa Arredondo, *Life Supporting Technologies; Technical University of Madrid, Spain*

12:00
Data Driven MCI and frailty prevention: geriatric modelling in the City4Age project **549**
Giovanni Ricevuti, *University of Pavia, Italy*
Letizia Venturini, *University of Pavia, Italy*
Sergio Copelli, *MultiMed Engineers srls, Italy*
Franco Mercalli, *MultiMed Engineers srls, Italy*
Giuseppe Nicolardi, *Università del Salento, Italy*

12:15
An interactive environment for managing detected data towards geriatric prevention **555**
Vladimir D. Urošević, *Belit Ltd. Belgrade, AMIS "Association for Medical Informatics of Serbia", Belgrade, Serbia*
Paolo Paolini, *Polytechnic of Milan, Italy*
Christos Tatsiopoulos, *Independent Researcher, Greece*

12:30
Activity Recognition Approaches for Smart Cities **560**
Aitor Almeida, *DeustoTech - Deusto Institute of Technology, Spain*
Gorka Azkune, *Deusto Tech, Spain*