

Editorial Preface

Special Issue on New Simulation Based Solutions for Education, Training, and Decision Making in the Healthcare Sector

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In recent years, healthcare systems all over the world are facing huge challenges caused by new diseases, demographic changes, medical accidents and rising costs. Indeed, healthcare is nowadays a major research area where the use of modelling and simulation based approaches can be regarded as an excellent tool for investigating and solving complex problems including, among others, the spread of diseases, analysis of biological systems, organization of healthcare processes, resource optimization, scheduling of activities, etc.

Simulation is a technique for practice and learning that can be applied to many different disciplines in order to replace and amplify real experiences with guided ones, often “immersive” in nature, that evoke or replicate substantial aspects of the real-world experience. Simulation-based learning can be the way to develop health professionals’ knowledge, skills, and attitudes, whilst protecting patients from unnecessary risks as well as be used as a measurement tool linked to targeted teamwork competencies and learning objectives.

The *Special Issue on New simulation based solutions for education, training and decision making in the healthcare sector* of the International Journal of Privacy and Healthy Information Management focuses then on Modeling & Simulation applied to health systems and on different healthcare-related issues and problems which are explored using multidisciplinary simulation-based approaches.

The first paper “Multi-Perspective Modeling of Healthcare Systems” presents a multi-perspective approach to Modeling and Simulation (M&S) of Healthcare Systems (HS) such that different perspectives are defined and integrated together and provides a DEVS (Discrete Event System Specification)-based formalization of the loose integration of the different perspectives, an Object-Oriented framework for its realization and a case study as illustration and proof of concept.

The next paper “Developing a Framework for Multi-Scale Modeling of the Digital Patient” focuses on design issues in RFID-enabled healthcare systems, on the Digital Patient concept as a digital representation of ‘health’ and ‘disease’ and on a powerful decision support technology that can be customized to represent each one of us, individually or collectively.

Next, in the paper, “SMoBAICS: The Smart Modular Biosignal Acquisition and Identification System for Prosthesis Control and Rehabilitation Monitoring”, the author discusses on the next generation of an embedded data acquisition and identification system and its flexible platform architecture. Different application scenarios are shown to illustrate the system in different application fields.

The last paper of the special issue “Diabetes-Related Cognitive Decline, a Global Health Issue and New Treatments Approaches” explores most recent research which emphasizes the role of brain insulin in neurotrophic signaling, neuromodulation, nutrient homeostasis and metabolism. A new concept of brain insulin resistance has indeed emerged, as potential pathways for altered transport and signaling within the brain, as well as between the brain and the periphery, as a potential mechanism underlying DM-related cognitive decline.

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Francesco Longo

Guest Editor

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