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Editorial: Smart Objects and Technologies for Social Good

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1 Editorial

Social good can be defined as something (such as a "good" or a service) that benefits the largest number of people in the largest possible way. In other words, social good implies a positive societal impact in areas including climate change (e.g., clean air, clean water), healthcare, education (e.g., literacy).

In this context, the pervasiveness of today's smart objects and technologies are creating unprecedented opportunities for social good. In fact, connectivity and innovation in technology have the potential to impact our lives, tackling some of the world's toughest challenges in term of climate impact and environmental sustainability, diversity and inclusion in education and healthcare, and communities at risk, to nominate a few. A clear example is represented by the Internet-of-things (IoT), that taking advantage of smart objects with sensing and connectivity capabilities, can help in transforming our world for the better. In fact, along with advances in data analytics, blockchain technology, and low-power wide-area network, IoT-enabled devices and sensors are being used to address social issues such as reducing air pollution, creating a clean environment, save energy and water, create smarter agriculture and food supply systems.

This special issue features seven selected high-quality papers in the fields of LoRa architecture for rural areas, routing protocols in MANET, IoT-enabled data visualization for sustainability and safety, deep learning for human activity recognition, serious games in the context of cognitive behavioural therapy, blockchain both considering the users' social impact and its usage in E-Health Environments.

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The first article entitled "*LADEA: a software infrastructure for audio delivery and analytics*" describes LADEA, a generic software infrastructure for delivering audio messages and enabling audio analytics exploiting a LoRa architecture that can include generic external data sources using an MQTT-based interface. The study is framed in the context of remote locations, like rural areas, with the goal of employing LADEA to provide two basic services: a voice messaging system that allows users who cannot read or write to send voice notes, and an audio compression service to extract the main features from the audio input to use it for developing intelligent ML-based audio analytics.

The second article, entitled "*Location Dynamic Tabu Routing Protocol for MANETs*" proposes a dynamic routing protocol based on a tabu search approach, relying on local network knowledge and in-packet short-term memory to alleviate the local minima problem. The authors investigated the behavior of the analyzed routing protocols in a general MANET, considering a wide range of application scenarios which may include sensors, vehicles, drones, mobile users, etc. in smart homes, campuses, cities, farms, and industries. To validate the proposed approach, the study presents an experimental assessment, measuring protocol performance under different configurations and profiles, evidencing its benefits.

In the next article, entitled "*On exploiting Data Visualization and IoT for increasing sustainability and safety in a Smart Campus*", a study concerning the design and implementation of a testbed where IoT and Data Visualization have been exploited to increase the sustainability and safety of a Smart Campus is presented. In particular, the authors report on the overall system architecture and the interactive dashboard that has been designed to facilitate the management of the campus premises and the timetabling. As case studies, the authors focused on improving the campus sustainability (in terms of energy saving) and safety (considering the COVID-19 restrictions and regulations).

The fourth article entitled "*Alternative Deep Learning Architectures for Feature-Level Fusion in Human Activity Recognition*" proposes new deep learning architectures to fuse data provided by multiple sensors. In order to make the data fusion possible, the authors exploited convolution, dense, and concatenation layers. To validate the proposed approaches in

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the Human Activity Recognition domain, the Mobile HEALTH dataset, which consists of inertial data and electrocardiograms collected from different sensors worn by subjects, has been exploited. Finally, the authors discuss the obtained results showing that the proposed deep learning architectures are suitable and promising for data fusion in HAR.

The fifth article, "*An engaging serious game aiming at awareness of therapy skills associated with social anxiety disorder*" presents the design of a serious game, built using the Unity 3D engine and C# programming language, aiming at engaging university students in raising their awareness of cognitive behavioral therapy (CBT) skills associated with social anxiety disorders. The study was based on three different iterations (study 1, study 2, and study 3), all included within a formative evaluation framework. The authors report on the positive findings in terms of focused attention, perceived usability, aesthetic appeal, being worthwhile, and narrative understanding.

Next, "*Analysis of Witnesses in the Steem Blockchain*" presents an investigation on the witness users on the blockchain Steem and their contribution to the social platform Steemit (the most important blockchain-based social networking site) and their social impact. To this end, the authors present two sets of analyses that cover the witnesses' blogs and their accounts. To anticipate here some results, the blog analyses show that witnesses are socially impactful users, they create lots of content, and the content they create are highly evaluated by the users in Steemit, while the accounts analyses confirm the social activity of witnesses and uncover additional details concerning their rewards, in particular as content creators and content curators.

To conclude the special issue, in the last article, entitled "*Distributed Network Slicing Management Using Blockchains in E-Health Environments*", the authors take advantage of the network slicing (NS) concept to create a solution for NPNs (e.g., hospital network) in e-health environments which maintains QoS and privacy requirements among slices. In addition, the authors propose a blockchain mechanism to secure the NS management layer. This mechanism ensures data integrity and reliability for the NSs settings. To assess their approach, the authors deployed a Proof of Concept using the 5G-EmPOWER system and a public blockchain, and they evaluated some performance metrics in different scenarios.

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