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*Editorial*

# Smart Objects and Technologies for Social Good

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Social goods are commodities and services that for-profit businesses, government agencies, or private enterprises may offer. Many people with unique needs, including seniors, athletes, and children, will benefit from it. Health care, safety, sports, the environment, democracy, computer science, and human rights are all examples of social goods.

Sensors may be used to create socially beneficial solutions that support various physical activities, air quality, and temperature. The present global pandemic scenario linked to the spread of the coronavirus emphasizes the crucial importance of sensors in the prevention and treatment of many illnesses. The use of computer science tools will support a variety of cross-domain disciplines. Sensors of several kinds are present in mobile devices. These sensing components include an accelerometer, a magnetometer, a gyroscope, a microphone, and a GPS receiver. There are many ways to employ these sensors to advance social good. Additionally, intelligent environments contain a variety of sensors, including motion, touch, door, and light sensors. The sensors can help people recognize certain aspects. Mobile gadgets like smartphones, tablets, and smartwatches are also frequently used. Different capacities of mobile devices can enhance the outcomes of social good initiatives. These technologies' precision and statistical analysis are crucial to their acceptability.

Social networks and human–computer interaction aid in developing various chances and solutions for various sorts of individuals. Different technology and architectural styles can be used in varied situations. Other individuals can be monitored using inexpensive sensors, such as electromyography, electrocardiography, and electroencephalography.

The development of medical technologies that help the preliminary diagnosis of various diseases is facilitated by sensory systems. Additionally, the Internet of Things, Smart Cities, Distributed Sensing, and Fog Computing are exemplary examples of new information and communication technologies (ICT) paradigms that seek to describe a dynamic and globally cooperative infrastructure based on the intelligence and self-configuring abilities of objects. These interconnected things are making their way into our infrastructure, cars, cities, and wallets.

Mobile device use is expanding in various daily activities, and it first emerged among young people. Nevertheless, elderly individuals are now adopting these kinds of gadgets. The capabilities of technological instruments are constantly evolving, and they now include a variety of sensors that may collect various physiological and physical data. The development of ICT technologies for well-being includes the creation of these systems. Additionally, m-Health and e-Health solutions may not come to fruition.

Additionally, it can serve as a preventative measure by encouraging healthy behaviors and giving direct guidance to stop bad habits. In this area, several solutions are currently being developed. These ideas can enhance our quality of life and be applied to the design and creation of cutting-edge social assistance technology. It is a broad and diverse topic for the improvement of public health. Internet of Things applications also offer a constant stream of data continuously gathered in real time. In the context of a smart city, the collected data may be used with machine learning techniques to forecast unforeseen occurrences. These intelligent cyber–physical systems can serve as the foundation for the creation of improved technologies for societal benefit.

We invited theoretical and application-focused papers on various traditional and cutting-edge medical topics, including intelligent systems and devices, distributed computing, artificial intelligence, sensored devices, participatory medicine, big data, precision systems, automation, the Internet of Things, cyber–physical systems, and others. Through invited and open call submissions, four excellent research papers have been accepted, following a rigorous review process that required a minimum of three reviews and at least one revision round for each article.

The first paper, authored by Luiz Henrique A. Salazar, Valderi R. Q. Leithardt, Wemerson Delcio Parreira, Anita M. da Rocha Fernandes, Jorge Luis Victória Barbosa, and Sérgio Duarte Correia [1], developed a prediction model that can tell if a patient will show up for their planned appointment after exploring the primary factors that influence a patient's no-show. Data from clinics that provide services to the Unified Health System (SUS) at the University of Vale do Itaja in southern Brazil served as the study's data source. An actual dataset with roughly 5000 samples was used to test the model. The Random Forest classifier produced the best model result with a Recall Rate of 0.91 and a ROC curve rate of 0.969.

The second contribution, presented by Pedro Ponce, Omar Mata, Esteban Perez, Juan Roberto Lopez, Arturo Molina, and Troy McDaniel [2], attempted to create a low-cost robot called Robocov at Tecnologico de Monterrey, Mexico, using applications of artificial intelligence and the S4 idea for the design. Robocov was created as a quick response to the COVID-19 Pandemic. Robocov can carry out various activities because the S4 principle offers hardware and software flexibility. Therefore, Robocov can positively influence non-hospital care, laboratory and supply chain automation, continuity of work, quality of life, and public safety. Robocov may be incorporated as a technical instrument for achieving the conditions necessary to meet government rules of the new normalcy thanks to its mechanical design and software development, which enable it to carry out support duties efficiently.

Additionally, it is a simple process that just one operator could do to reconfigure the robot to go from one activity (robot for disinfection) to another (robot for recognizing face masks). Robocov is a teleoperated device that relays information to the operator using cameras and an ultrasonic sensor. Additionally, pre-recorded pathways can run independently. Robocov has a speaker and microphone for communication purposes. Additionally, utilizing a pre-trained model for classification, a machine learning technique for recognizing face masks and social distance is included. This paper's ability to demonstrate how an S3-based reconfigurable robot may have AI approaches is one of its most significant achievements. Furthermore, this study must avoid going into depth about each robot subsystem.

Diogo E. Moreira da Silva, Eduardo J. Solteiro Pires, Arsénio Reis, Paulo B. de Moura Oliveira, and João Barroso have contributed to the third paper of the Special Issue [3]. The authors mostly predict academic dropout using existing data mining techniques. They show and evaluate four distinct machine-learning approaches. The dataset includes 331 former students from the Universidade de Trás-os-Montes e Alto Douro who were pursuing a degree in computer engineering at the time. The project's goal is to use current approaches to identify kids who could leave school early. The Permutation Feature Importance approach was used to determine which data characteristics were the most pertinent. Several techniques were used in the second phase to forecast dropouts. The best method to predict academic dropout was then determined by comparing the outcomes of each machine learning methodology. The methods employed produced positive results, yielding an F1-Score of 81% in the final test set, proving that students' grades are somehow affected by their living arrangements.

Finally, the fourth paper, written by Hicham Ajami, Hamid Mcheick, and Catherine Laprise Campo [4], presented a new personalized approach to managing asthma. An ontology-driven model supported by Semantic Web Rule Language (SWRL) medical rules is proposed to provide personalized care for an asthma patient by identifying the risk factors and the development of possible exacerbations. The originality of the proposed approach resides in the dynamic control of thresholds that govern asthma triggers. The authors build a formal knowledge base of the relevant parameters and their relationships that can be used to monitor the environmental risk factors and food allergens depending on the patient's medical profile.

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