



Editorial to selected papers from the TC17 Events "International Symposium on Measurements and Control in Robotics" (ISMCR2021) and VRISE2021 - Topical Event on Robotics for Risky Interventions and Environmental Surveillance

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Dear readers,

This special issue includes selected papers from the two events organized by TC-17, the IMEKO Technical Committee on Robotic Measurement. Annually TC17 organizes "International Symposium on Measurements and Control in Robotics" (ISMCR), a full-fledged event, focusing on various aspects of international research, applications, and trends of robotic innovations for benefit of humanity, advanced human-robot systems, and applied technologies, e.g. in the allied fields of telerobotics, telepresence, simulation platforms, and environment, and mobile work machines as well as virtual reality (VR), Augmented Reality (AR) and 3D modeling and simulation.

During the IMEKO Congress years, TC17 organizes only "Topical Events." In 2021, TC17 organized two virtual topical events, both following the COVID-19 restrictions. ISMCR2021 had a theme "Virtual Media Technologies for the Post COVID-19 era" and the other TC17-VRISE was a jointly organized event with the theme "Robotics for Risky Interventions and Environmental Surveillance." VRISE stands for Virtual Robotics for Risky Interventions and Environmental Surveillance, the same as the theme. The papers in this special issue segment were selected from the above two events.

This special issue covers a variety of topics that relate to Augmented Reality/Virtual Reality (AR/VR), Tools impacted by COVID-19, and 3-D printing as they relate to robotics, including key applications of robotics technology. One AR/VR paper by

Karen Alexander and Jennifer Rogers entitled "Standards and Affordances of 21st-century Digital Learning: using ARLEM and xAPI to track Bodily Engagement and Learning in XR(VR, AR, MR)" describes digital learning using new tools. The other paper entitled "AREL-Augmented Reality-based enriched learning experience" by A. V. Geetha and T. Mala shows the usage of AR in the learning process.

Covid-19 has impacted not only the individual researchers but also the experiments and their underlying tools and methodologies. Zuzana Kovarikova, Frantisek Duchon, Andrej Babinec and Dusan Labat in their paper entitled "Digital Tools in the Post Covid-19 age as a part of Robotic System for Adaptive Joining of Objects" described the development of the new tools while Ahmed Alseraidi, Yukiko Iwasaki, Joi Oh, Takumi Handa, VitvasinVimolmongkolpom, Fumihiko Kato and Hiroyasu Iwata in their paper, "Experiment Assisting System with local Augmented Body (EASY-LAB)for the post-COVID-19 era" presents other COVID-related discussions.

3-D printers have made equipment component inventories and procurement issues less problematic. Two papers, one entitled "Twisted and Coiled Polymer Muscle Actuated Soft 3D Printed Robotic Hand with Peltier Cooler for Drug Delivery in Medical Management" by Pawandeep Singh Matharu et al, and another entitled "iGrab Duo: Novel 3D printed Soft Orthotic Hand Triggered by EMG signals," authored by Irfan Zobayed et al discuss their research work on the 3D activities that relate to robotic components and application.

Paper on "Jelly-Z: Twisted and Coiled Polymer Fishing Line Muscle actuated Mini-Jellyfish robot for Environment Surveillance and Monitoring" by Pawandeep Singh Matharu et al, paper entitled "Disarmadillo: an open source remotely controlled platform for humanitarian demining," by Emanuela Cepolina, Alberto Parmiggiani, Carlo Canali, Ferdinando Cannella, while a third paper entitled "Path planning for data collection robots" by Sara Olsz-Szabo and Istvan Hermati present other robotics application research work.

These symposia are forums for the exchange of recent research results and provide futuristic ideas in robotics

technologies and applications. They interest a wide range of participants from government agencies, relevant international institutions, universities and research organizations, working with futuristic applications of automated vehicles. The presentation is also of interest to the media as well as the general public.

We are sure the readers will find these papers useful in their professional applications.

Dr. Zafar Taqvi
Editor Special Issue