Editorial

Selected papers from the 13th International Conference BIOMDLORE 2021 in Vilnius, Lithuania

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This special section in *Technology and Health Care* contains a collection of selected papers from 13th International Conference BIOMDLORE 2021, which was held on 21–23 October 2021 in Vilnius, Lithuania.

BIOMDLORE stands for BIOmechanics, Medical Diagnostics, LOcomotion and REhabilitation; it is an International Conference, organized by the Lithuanian Society of Biomechanics and non-profit foundation Educating Students in Engineering and Medicine (ESEM), in cooperation with Vilnius Gediminas Technical University (Lithuania), Kaunas University of Technology (KTU) and Biaşystok University of Technology (Poland). The scope of the conference is focused on the various issues of biomedical engineering: human body biomechanics, gait and posture, orthopaedics and traumatology, assistive technologies, rehabilitation engineering, medical diagnostics, biosignal processing, mathematical modelling, sports biomechanics, and robotics in healthcare. As the title of this special section suggests, the research presented here tries to bridge the gap between Engineering and Medicine, raise the problems related to healthcare and provide engineering-based solutions.

The contents of the special section present some of the research problems which are currently explored within the field of biomedical engineering and biomechanics. In total 11 papers presented here are focused on various topics ranging from violin biomechanics to applications of artificial intelligence technologies.

In "*Biomechanical analysis of the right elevated glenohumeral joint in violinists during legato-playing*", authors aim to investigate the relationship between the right shoulder elevation and the force in the right glenohumeral joint during violin playing. The results indicate that the absolute values of the resulting force are higher in playing the violin with the shoulder raised than in a normal posture.

In "*Computational analysis of aortic haemodynamics in the presence of ascending aortic aneurysm*", authors examine the haemodynamic parameters of an ascending aorta and ascending aortic aneurysm in humans. The results show that the highest blood velocity was found in the aorta with the aneurysm.

In "*Application of nonlinear analysis for the assessment of gait in patients with Parkinson's disease*", authors conduct a non-linear analysis to assess the gait of subjects diagnosed with Parkinson's disease. The results indicate statistically significant differences in some parameters that can be used to differentiate different subjects based on UPDRS assessment.

In "*A computational method to differentiate rheumatoid arthritis patients using thermography data*", authors try to estimate which clinical data is significant in the diagnosis of rheumatoid arthritis from thermograms. The results obtained suggest that the thermography data can be considered in addition to the currently available tools for screening, diagnosis and monitoring of disease progression.

In "*Smart textile device for shooter's fingers movement monitoring*", authors developed the smart textile-based trigger pull monitoring system. The developed trigger pull monitoring system provides signals that could be used to recognize incorrect trigger pull motions during gun shots.

In "*Research on physical activity variability and changes of metabolic profile in patients with prediabetes using Fitbit activity trackers data*", authors aim to analyse the potential of patient physical activity monitoring using physical activity trackers and find solutions for possible implementation in the health care routine. The evaluation of physical activity variability is essential for patient health, and the methods used for the calculations provide an effective way to analyse big data from wearable devices in future trials.

In "*Cortical activity, kinematics and trunk muscles activity response to pelvis movements during unstable sitting*", authors evaluate theta and alpha waves cortical activity, trunk muscles activity and kinematics in static and dynamic sitting on different platforms for balance control.

In "*Classification and action rules in identification and self-care assessment problems*", authors applied machine learning methodologies to extract classification and action rules, useful for those who work with children with disabilities.

In "*An effect of spinal and ankle-foot orthoses on gait of a spastic diplegic child: A case report*", authors investigate individual gait parameters of a spastic diplegic CP child under different conditions to determine the influence and effectiveness of the orthoses used.

In "*2D numerical investigations derived from a 3D dragonfly wing captured with a high-resolution micro-CT*", authors created a realistic 3D model of a dragonfly wing and explored how different geometry changes influence aerodynamic effects of the wing.

In "*Quantitative assessment of the level of instability of a single-plane balance platform*", authors evaluate the mechanical characteristics of a suspended single-plane instability balance platform which determines quantitative instability characteristics.

The results of the research presented in this section are of interest to experts in engineering, medicine, rehabilitation, orthopaedics and other fields. I hope that the readers enjoy this special section.