Mathematical Problems in Engineering

Hindawi

Special Issue on

Applied Mathematics for Engineering Problems in Biomechanics and Robotics

CALL FOR PAPERS

This special issue brings together the mathematical work with regard to the disciplines of biomechanics and robotics, which are increasingly closely related. On the one hand, biomechanics is the application of the principles and techniques of mechanics to the structure and functions of living organisms. On the other hand, robotics is the branch of science and technology that deals with the design, construction, operation, and application of robots and automated mechanical systems. They promise to be some of the most influential research lines of the twenty-first century, since they generate innovation in a wide range of research fields. They cover areas such as medicine, healthcare, sports, logistics and distribution, manufacturing industries, and business technology. Both disciplines present an inherent multidisciplinary character, which is based on mathematics, physics, biology, and informatics. In this way, this special issue is intended to deal with mathematical work regarding medical imaging and visualization, bioinformatics, exoskeletons, micro-electro-mechanical systems and nanotechnology, new biomaterials and sensors, medical robotics, healthcare robots, injury prevention and rehabilitation, enhancement of patient and worker safety and quality, ergonomics, production, logistics and distribution applications, socioeconomic and management issues, and decision-making processes related to these disciplines.

Papers devoted to applied mathematics of both biomechanics and robotics and also to their integration are welcome. Consequently, the objective of this special issue is to disseminate advanced mathematical research on biomechanics and robotics and their applications while promoting the integration between them. We invite authors to contribute original research articles addressing significant issues and contributing towards the development of new concepts, methodologies, applications, trends, and knowledge to science. Review articles describing the current state of the art are also welcome.

Potential topics include but are not limited to the following:

- Biomechanics and robotics: use of techniques from the computational mechanics such Finite Element Analysis (FEA) or Multibody Dynamics Analysis (MDA)
- New mathematical approaches, innovations and challenges in biomechanics and robotics
- Biomechanics and robotics: new trends in modelling and simulation
- Kinematics, dynamics, and optimization procedures in biomechanics and robotics
- Computer methods in biomechanics, biomedical engineering, and robotics
- Applied mathematics to deal with manufacturing, production, logistics and distribution, product design, ergonomics, management and socioeconomic aspects, and (fuzzy) decision-making processes related to biomechanics and robotics
- Topics related to mathematical approaches to human motion analysis, virtual prototypes, diagnosis, injury prevention, treatment, and rehabilitation
- Sports performance, training techniques, and development of materials and equipment by means of biomechanics and robotic
- Biomechanics and robotics applications in medicine, work efficiency, and risk factors among assembly line workers

Authors can submit their manuscripts through the Manuscript Tracking System at https://mts.hindawi.com/submit/journals/mpe/amep/.

Papers are published upon acceptance, regardless of the Special Issue publication date.

Lead Guest Editor
Carlos Llopis-Albert, Universitat Politècnica de València, Valencia, Spain
cllopisa@gmail.com

Guest Editors
Francisco Rubio, Universitat Politècnica de València, Valencia, Spain
frubio@mcm.upv.es

Shouzhen Zeng, Ningbo University, Ningbo, China
zszzxl@163.com

Huchang Liao, Sichuan University, Chengdu, China
liaohuchang@163.com

Submission Deadline
Friday, 27 July 2018

Publication Date
December 2018