Applied Bionics and Biomechanics
Vol. 5, No. 4, December 2008, 165

Taylor & Francis
Taylor & Francis Group

Editorial

Welcome to our 1st Special Issue on *Humanoid Robots*. In this issue you will find some important Articles on this exciting field. We believe that this field overlaps significantly with the intended scope of our Applied Bionics and Biomechanics.

First, in the article *State Classification for Humanoid Robots,* by Jialun Yang, Feng Gao, Lifeng Shi, and Zhenlin Jin, the motion planning problem of humanoid robots it is decoupled into: topological state planning, and detailed motion planning. Several basic states are proposed; each basic state is classified further from the topological point of view, and Generalized Function (GF) set theory is applied for kinematic analysis. Next, *Reproducing Human Arm Motion Using a Kinematically Coupled Humanoid Shoulder-Elbow Complex*, by Michael M. Stanisic, and Craig M. Goehler, presents a study for a kinematic description of the shoulder-elbow complex. The authors present a mechanism capable of reproducing voluntary human reaching motions along with the procedural method of implementing the coupled motions that exist within the human shoulder complex and shoulder-elbow complex. Afterwards, *A Low-Cost Anthropometric Walking Robot for Reproducion Gait Lab Data, by* Rogerio S. Santanta, Agenor T. Fleury, and Luciano Luporini Menegaldo, deals with the modeling and control aspects on the design, construction, and testing of a biped walking robot conceived to, in a limited way, reproduce the human gait. The robot has been assembled with low cost components and can reproduce, in assisted way, real gait patterns based on experimental gait data. Next, *Behaviour Generation in Humanoids by Learning Potential-based Policies from Constrained Motion,* by Matthew Howard, Stefan Klanke, Michael Gienger, Christian Goerick, and Sethu Vijayakumar, presents a method for learning potential-based policies from constrained motion data. The proposed method can combine observations from a variety of contexts where different constraints are in force, to learn the underlying unconstrained policy in form of its potential function; and to generalize and predict behavior where novel constraints apply. In a subsequent article, *Analysis of Physical Human-Robot Interaction for Motor Learning with Physical Help*, by Shuhei Ikemoto, Takashi Minato, Hiroshi Ishiguro, physical Human-Robot Interaction (PHRI) it is treated as an important extension of traditional HRI research. The main objective is to develop a motor learning system that uses physical help from a human assistant. The article presents a new control system that takes advantage of inherent joint flexibility, and a novel measure that reveals the difference between smooth and non-smooth physical interactions. Next, *Humanoid Robot RH-1 for Collaborative Tasks. A Control Architecture for Human-Robot Cooperation*, by Concepción A. Monje, Paolo Pierro, and Carlos Balaguer, present an advanced control system for a full scale humanoid robot (RH-1) that can perform tasks in cooperation with humans. The collaborative tasks are carried out in a semi-autonomous way and are intended for operation in real working environments where humans and robots can share the same space. Finally, *Extending NGOMSL Model for Human-Humanoid Robot Interaction in Soccer Robotics Domain*, by Mohan Rajesh Elara, Carlos A. Acosta Calderon, Changjiu Zhou, and Pik Kong Yue, focuses on extending the Natural Goals, Operators, Methods, and Selection rules Language (NGOMSL) model for usability evaluation of human-humanoid robot interaction in soccer robotics domains. The NGOMSL model for human-humanoid interaction design of Robo-Erectus Junior is considered, and the experimental results show that the interaction design is able to find faults in an average time of 23.84s and to detect faults within 60s in 100% of the cases.

I would like to mention that Applied Bionics and Biomechanics will be publishing in the near future another Special Issue on *Humanoid Robots*. That Special Issue will again contain significant contributions on the field. I would like also to bring to your attention that we will also be publishing in the near future other Special Issues on related topics such as: *Biologically Inspired Robots and Mechanisms, Upper and Lower Limb Exoskeletons*, and *Robot Assisted Surgery*.

We warmly welcome past, present, and new authors to the regular and Special Issues of our journal that it is truly international in scope with published manuscripts from all over the world. I hope that our regular issues, this Special Issue on Humanoid Robots, and the upcoming Special Issues, will continue to be of great interest, use, and benefit to you.

Dr. Rene V. Mayorga
Editor in Chief

ISSN: 1176-2322 print / 1754-2103 online

DOI: 10.1080/11762320902898920
http://www.informaworld.com