Applied Bionics and Biomechanics
Vol. 7, No. 1, March 2010, 1

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Editorial

Welcome to the third Special Issue on Biologically Inspired Robots and Mechanisms.

Biological inspiration is widely adopted in many areas of engineering, robotics and mechanics. In some cases, the solutions tuned by nature over millions of years, through evolution, are more effective and better suited for developing innovative technologies for specific applications.

This is the case of the search strategy of the moth, which is imitated by Wei Li in his paper "*Identifying an Odour Source in Fluid-Advected Environments, Algorithms Abstracted from Moth-inspired Plume Tracing Strategies*" for developing innovative algorithms abstracted from the moth-inspired chemical plume tracing strategies for identifying chemical sources with a success rate of more than 90%.

At the same time, engineering tools can be used better to describe biological systems and to explain their behaviour. In his paper "*SA-1 Mechanoreceptor Position in Fingertip Skin May Impact Sensitivity to Edge Stimuli*", Gregory Gerling modelled the human skin to predict the neural response of mechanoreceptors.

In the third paper of this Special Issue, "*Physarum Boats: If Plasmodium Sailed It Would Never Leave a Port*", Andrew Adamatzky presents an original approach to the use of the plasmodium unicellular organism as a propeller system and a massive parallel information processing system in Biorobotics.

The paper "*A Biologically Derived Pectoral Fin for Yaw Turn Manoeuvres*" by Gottlieb et al. describes the study and modelling of the pectoral fin of bluegill sunfish for the purpose of developing a robotic fin that produces the forces and flows required to obtain manoeuvrability comparable to the biological counterpart.

Ayers et al. report, in their paper "*Controlling Underwater Robots with Electronic Nervous Systems*", a feasibility study of the fabrication of a VLSI circuit integrating basic biological neural circuitries, like the CPG and exteroceptive reflexes, which can represent an effective tool for the implementation of bio-inspired motor control in robots.

Bio-inspired approaches can have effective results in the space environment, too. The paper "*Passive Control of Attachment in Legged Space Robots*" reports a study on the adhesion system and leg kinematics of spiders and geckos, verified with a simulation that can provide effective solutions for safe attachment in absence of gravity.

Finally, Naik et al. present the paper "*Design, Development and Control of a Hopping Machine – an Exercise in Biomechatronics*" where hopping is considered as a complex dynamic behaviour in animals, representing an important technological challenge. The development of a hopping machine with pneumatic actuators provides an experimental tool for investigation in this field as well as an educational tool for teaching real-time control of hybrid and non-linear systems.

Applied Bionics and Biomechanics warmly welcomes past, present and new authors to the regular and Special Issues of this journal, as they are truly international in scope with published manuscripts from all over the world. We hope that the regular issues, this third Special Issue on *Biologically Inspired Robots and Mechanisms* and other upcoming Special Issues will continue to be of great interest, use and benefit to you.

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ISSN: 1176-2322 print / 1754-2103 online

DOI: 10.1080/11762320903545348
http://www.informaworld.com