Call For Papers: Adaptive Behavior Special Issue No 10

Plastic mechanisms, multiple timescales and lifetime adaptation

Submission Deadline: 15 July 2002

Webpage: http://www.cogs.susx.ac.uk/users/ezequiel/ab−cfp.html

Guest Editor

Ezequiel A. Di Paolo
Evolutionary and Adaptive Systems,
School of Cognitive and Computing Sciences,
University of Sussex,
Brighton, BN1 9QH,
UK

ezequiel@cogs.susx.ac.uk

Editor−in−Chief

Peter M. Todd
Center for Adaptive Behavior and Cognition,
Max Planck Institute for Human Development,
Lentzealle 94,
D−14195 Berlin,
Germany

editor@adaptive−behavior.org

The last few years have seen an increased interest in the design of plastic robot controllers, or controllers with inherent dynamical properties such as the interplay of multiple timescales, for the generation highly adaptive and robust behaviour. This research area in robotics draws important inspiration from neuroscience and may be applied to the testing and generation of hypotheses on the role of plasticity in brain function. Synthetic methods, such as evolutionary robotics, have provided a glimpse of how plastic neural mechanisms, like activity−dependent neuromodulation, that are often studied locally in reduced systems, can give rise to integrated and coordinated performance in a whole situated robot.

Recent studies have included the role of modulatory processes affecting neural activation, diffusing localized neuromodulation, the evolution of rules of synaptic change, the design of neural controllers acting on fast and slow timescales, and the evolution of stabilizing mechanisms of cellular activity. These studies have successfully revealed that such mechanisms are able to introduce highly desirable properties such as robustness, adaptation to bodily perturbations, and improved evolvability. But many questions remain open, such as what is the relation between plasticity and stability, how adequate is a given mechanism for the required task, how do alternative methods of obtaining plastic behaviour relate, and to what extent is environmental regularity responsible for successful tuning of neural controllers.

Adaptive Behavior solicits high quality contributions on these topics for its 2002 special issue (vol 10:3/4). Papers should describe work integrating mechanisms and adaptation at the behavioural level. They may present work using simulations or real platforms. Appropriate contributions addressing other levels of plasticity (such as sensory morphology or bodily structure) will also be considered. Papers drawing inspiration from, and contributing back to, neuroscience will be particularly appropriate.

Topics:

- Multi−timescale controllers
- Activity−dependent plastic neural controllers
- Change and stability in robot performance
- Adaptation to radical perturbations
- Neuromodulation
- Re−configurable neural controllers
- Plastic controllers and simulation/robot transfer

Submissions

Authors intending to submit are also encouraged to contact the Guest Editor as soon as possible to discuss paper ideas and suitability for this issue. Submission of manuscripts should be made to the Guest Editor at the address below.

Submissions due: 15 July 2002

Submissions should be in English, with American spelling preferred, in the style described in the Fourth Edition of the Publication Manual of the American Psychological Association, be double−spaced throughout and not normally exceed 25 journal pages (40 manuscript pages including figures, tables and references). Electronic submission in PDF format is strongly preferred. Each submission should have a title page including: the submission's title; names, postal, and email addresses of the authors; the phone and FAX number of the corresponding author; and a short running title. The second page should contain an abstract of about 150 words and up to six suggested key words. The main text should start on page 3, with acknowledgements at the end.

Detailed guidelines for submission layout can be found on the ISAB web site at http://www.isab.org.uk/journal/ by following the link there labelled "Instructions to Contributors".

Submit manuscripts to the Special Issue Guest Editor in PDF format by email with "Special Issue 10" in the subject line.

Dr Ezequiel A. Di Paolo
School of Cognitive and Computing Sciences,
University of Sussex,
Brighton, BN1 9QH, UK
ezequiel@cogs.susx.ac.uk
Tel.: +44 1273 877763
Fax.: +44 1273 671320

Adaptive Behavior

Adaptive Behavior is the premier international journal for research on adaptive behaviour in animals and autonomous artificial systems. For over 10 years it has offered ethologists, psychologists, behavioural ecologists, computer scientists, and robotics researchers a forum for discussing new findings and comparing insights and approaches across disciplines. *Adaptive Behavior* explores mechanisms, organizational principles, and architectures for generating action in environments, as expressed in computational, physical, or mathematical models. *Adaptive Behavior* is published by Sage Publications, a leading independent publisher of behavioural journals, spanning human psychology to robotics to simulation modelling. A new editorial board, headed by Peter M. Todd of the Center for Adaptive Behavior and Cognition, is shaping the journal in novel directions. New technological infrastructure will allow faster publication turnaround, better feedback from reviewers to authors (and back again), and greater access to research results. The journal publishes articles, reviews, and short communications addressing topics including perception and motor control, learning and evolution, action selection and behavioural sequences, motivation and emotion, characterization of environments, collective and social behaviour, navigation, foraging, mate choice, and communication and signalling.