Call for Papers

Fourth International Workshop on
Epigenetic Robotics:
Modeling Cognitive Development in Robotic Systems

http://www.epigenetic-robotics.org

August 25-27, 2004

Location: LIRA-Lab, University of Genoa

Genoa, Italy

Submission Deadline: March 1st, 2004

This workshop focuses on combining developmental psychology, neuroscience, biology, and robotics with the goal of *understanding* the functioning of biological systems. Epigenetic systems, either natural or artificial, share a prolonged *developmental process* through which varied and complex cognitive and perceptual structures emerge as a result of the interaction of an embodied system with a physical and social environment.

Epigenetic robotics includes the two-fold goal of understanding biological systems by the interdisciplinary integration between neural and engineering sciences and, simultaneously, that of enabling robots and artificial systems to develop skills for any particular environment instead of programming them for specific environments. To this aim, psychological theory and empirical evidence should be used to inform epigenetic robotic models, and these models should be used as theoretical tools to make experimental predictions in developmental psychology.

We encourage the submission from different disciplines such as robotics, artificial intelligence, developmental psychology, biology or neurophysiology, as well as interdisciplinary work bridging the gap between science and engineering.

Subject Areas include, but are not limited to:

- The role of motivations, emotions, and value systems in development;
- The development of: concepts, consciousness and self-awareness, emotion, imitation, intentionality, intersubjectivity, joint attention, learning, motivation, non-verbal and verbal communication, self, sensorimotor schemata, shared meaning and symbolic reference, social learning, social relationships, social understanding ("mind reading", "theory of mind"), value systems;
- Interaction between innate structure, ongoing developing structure, and experience;
- Related issues in algorithms, robotics, simulated robots, and embodied systems;
- Strong AI (true intelligence and autonomy) versus weak AI;
- Related issues from human and nonhuman empirical studies.

For summaries of the papers from the latest workshops see Zlatev and Balkenius (2001), Prince (2002), and Berthouze and Prince (2003).

Please send any questions to the workshop co-chairs: Giorgio Metta (pasa@dist.unige.it) and Luc Berthouze (Luc.Berthouze@aist.go.jp).

Sponsors

LIRA-Lab, University of Genoa, Italy
Communications Research Laboratory, Japan

Location

University of Genoa, Italy

Invited Speakers

Luciano Fadiga, Dept. of Biomedical Sciences, University of Ferrara, Italy
Claes von Hofsten, Dept. of Psychology, University of Upssala, Sweden
Jürgen Konczak, Human Sensorimotor Control Lab, University of Minnesota, USA
Jacqueline Nadel, CNRS, University Pierre & Marie Curie, Paris, France

Submissions

Papers not exceeding *eight* (8) pages should be submitted electronically (PDF or Postscript) as attachment files to Luc Berthouze (Luc.Berthouze@aist.go.jp). Extended abstracts (maximum *two* pages) can also be submitted, and will be presented as posters (extended abstracts should also be submitted in PDF or Postscript as attachments to Luc Berthouze (Luc.Berthouze@aist.go.jp). Further instructions to authors will be posted on the workshop web page: http://www.epigenetic-robotics.org

Important Dates

March 1st, 2004:	Deadline for submission of papers and posters
April 21st, 2004:	Notification of acceptance for papers and posters
May 21st, 2004:	Deadline for camera ready-papers & posters
August 25-27, 2004:	Workshop

Organizing Committee

Christian Balkenius (Cognitive Science, Lund University, Sweden)
Luc Berthouze (Neuroscience Research Institute, AIST, Japan)
Hideki Kozima (Communications Research Laboratory, Japan)
Giorgio Metta (LIRA-Lab, University of Genoa, Italy)
Christopher G. Prince (Computer Science, University of Minnesota Duluth, USA)
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Gert Westermann (Department of psychology, Oxford Brookes University, UK)
Tom Ziemke (Department of Computer Science, University of Skovde, Sweden)

Publication of Papers & Poster Abstracts

Papers and poster abstracts will be published in the proceedings, and archived at CogPrints (http://cogprints.ecs.soton.ac.uk).

REFERENCES

Zlatev, J. & Balkenius, C. (2001). Introduction: Why "epigenetic robotics"? *Proceedings of the First International Workshop on Epigenetic Robotics: Modeling Cognitive Development in Robotic Systems* (pp. 1-4). Lund University Cognitive Studies, Volume 85.Available at: http://www.lucs.lu.se/Epigenetic-robotics/Papers/Zlatev.Balkenius.2001.pdf

Prince, C. G. (2002). Introduction: The Second International Workshop on Epigenetic Robotics. In C. G. Prince, Y. Demiris, Y. Marom, H. Kozima, & C. Balkenius (Eds.) *Proceedings of the Second International Workshop on Epigenetic Robotics: Modeling Cognitive Development in Robotic Systems*. Lund, Sweden: Lund University Cognitive Studies Volume 94. Available at: http://www.cprince.com/PubRes/EpigeneticRobotics2002/Prince-Intro.pdf

Weng, J., McClelland, J., Pentland, A., Sporns, O., Stockman, I., Sur, M., & Thelen, E. (2001). Autonomous mental development by robots and animals. Science, 291, 599-600. Available at: http://www.cse.msu.edu/dl/SciencePaper.pdf

Berthouze, L. and Prince, C. G. (2003). Introduction: The Third International Workshop on Epigenetic Robotics. In C. G. Prince, L. Berthouze, H. Kozima, D. Bullock, G. Stojanov, & C. Balkenius (Eds.) *Proceedings of the Third International Workshop on Epigenetic Robotics: Modeling Cognitive Development in Robotic Systems*. Lund, Sweden: Lund University Cognitive Studies Volume 101. Available at: http://www.d.umn.edu/~cprince/epigenetic-robotics/2003/intro.pdf