

## Message From The NNS President



Welcome to the Autonomous Mental Development Community and its Newsletter. I would like to congratulate you on the growth of the AMD community, especially on the creation of AMD Technical Committee and the birth of this AMD Newsletter. With the upcoming change of the name to Computational Intelligence Society, the AMD community should now will feel at home in our Society. The Society has a tradition of representing technical communities focused on learning and intelligent machines. Founded on the paradigms of Neural Networks, it has evolved in time toward Fuzzy Systems, Evolutionary Computation, Intelligent Systems and Applications and other, related directions. In addition to us, established CI researchers and engineers, the community of AMD researchers in such areas as psychology, neuroscience, machine intelligence and related fields are invited to look at the NNS (CIS) as their home society. Even if you do not think that you wear an engineer's hat, our Society offers you a home for computational intelligence, natural and artificial. Congratulations and welcome aboard, and see you at one of our conference or symposia!

-Jacek M. Zurada, President, IEEE Neural Networks Society (after June 20: Computational Intelligence Society)

## Message From The Chair Of The AMD Committee

Congratulations on the establishment of the AMD Technical Committee of the IEEE Neural Networks Society and the birth of the AMD Newsletter! I would like to thank all of you who have contributed to this new research field. I would also like to thank the IEEE NNS Society for its great support. As we can see, the new AMD Technical committee is truly multidisciplinary, consisting of active researchers in artificial intelligence, neuroscience, psychology, robotics, and other related fields. The IEEE Neural Networks Society has a glorious history of being multidisciplinary. The subject of autonomous mental development will bring these related research fields even closer. There have been many studies on the ways natural and artificial information processors share computational principles and characteristics. The process through which the processors autonomously develop will give more attractive reasons as to why and will explain and achieve higher capabilities.



-Juyang Weng, Chairman, Autonomous Mental Development Technical Committee

## Message From The Editor



Welcome to the inaugural issue of the AMD Newsletter, the Newsletter of the new AMD Technical Committee. I am honored to serve as its Editor and I would like to thank IEEE NNS for funding this newsletter. This newsletter is a medium to share information within the AMD community and a vehicle to reach other communities. We expect to produce four issues per year and plan to have the following regular columns: "Committee News" which announces AMD TC events and news; "General News" for announcements of related conferences, workshops, books, journals, etc.; and "Other" which may contain other matters such as glossaries. The success of this newsletter counts on your supports. Please send the material you recommend and your suggestions to me at [yilu.zhang@gm.com](mailto:yilu.zhang@gm.com).

- Yilu Zhang, Editor of the AMD Newsletter

## Committee News

- June 9, 2003: The “Proposal for Publication of the IEEE Transactions on Autonomous Mental Development by the IEEE Neural Networks Society” was submitted by Juyang Weng to IEEE NNS on behalf of the AMD Task Force of the IEEE NNS. The AMD Task Force consisted of Juyang Weng (chair), Minoru Asada, Roderic Grupen, Hideki Kozima, Stephen Levinson, and Olaf Sporns. The following people have also expressed their support for this proposal: Rodney Brooks, Jeff Elman, Stephen Grossberg, Thomas S. Huang, James L. McClelland, Michael Merzenich, Alex P. Pentland, Rolf Pfeifer, Enrique H. Ruspini, Mriganka Sur, and Esther Thelen.
- July 27, 2003: David Fogel, the IEEE NNS Vice President on Publications presented the proposal to the AdCom of the IEEE Neural Networks Society, chaired by Evangelia Micheli-Tzanakou, President 2003 of IEEE NNS. Juyang Weng was present at the AdCom meeting as a visitor to answer questions. The AdCom approved the proposal for IEEE Transactions on Autonomous Mental Development (IEEE TAMD). The IEEE-level approval is still pending.
- April, 2004: Creation of the AMD Technical Committee of the IEEE NNS was approved by the IEEE NNS President Jecek Zurada. Juyang Weng was appointed as the TC chairman by the IEEE NNS. The AMD TC charter was drafted according to some existing TC charters, AMD TC member composition was formed, and 10 technical task forces and one standing task force were established:

### Task Forces:

Speech and Auditory Processing Task Force  
Visual Processing Task Force  
Haptic and Motor Processing Task Force  
Languages and Language Acquisition Task Force  
Self-organization in Development Task Force  
Emotion Task Force  
Adaptive Motivational Systems Task Force  
Reasoning and Inference Task Force  
Attention and Joint Attention Task Force  
Robotics Task Force  
AMD Newsletters Task Force

### Chairs:

Stephen Levinson  
Juyang Weng  
Roderic Grupen  
Kim Plunkett  
Zhengyou Zhang  
Javier R. Movellan  
Olaf Sporns  
Yilu Zhang  
Hideki Kozima  
Minoru Asada  
Yilu Zhang

## Call For Papers

### FOURTH INTERNATIONAL WORKSHOP ON EPIGENETIC ROBOTICS

August 25-27, 2004

Deadline for camera-ready papers: May 21st

Genoa, Italy

<http://www.epigenetic-robotics.org>



### THIRD INTERNATIONAL CONFERENCE ON DEVELOPMENT AND LEARNING (ICDL '04)

October 20 - 22, 2004; advance registration deadline: May 5th

The Salk Institute for Biological Studies, La Jolla, California

<http://www.icdl.cc>

Papers due: May 21st, 2004, 10 AM GMT

Special journal issue planned for select papers from the conference

### SPECIAL ISSUE ON AMD IN THE IEEE TRANSACTIONS ON EVOLUTIONARY COMPUTATION

Papers due: Dec. 31, 2004.

<http://www.ieee-nns.org/pubs/tec/>

## Call For Participation

### WORKSHOP ON THE ROLE OF CONSCIOUSNESS IN MEMORY

May 1-2, 2004, Memphis, TN

Register now online at <http://www.cs.memphis.edu/~wrcm/>

### EIGHTH INTERNATIONAL CONFERENCE ON COGNITIVE AND NEURAL SYSTEMS

May 19-22, 2004, Boston, MA

More information at <http://www.cns.bu.edu/cns-meeting/conference.html>

### INTERNATIONAL JOINT CONFERENCE ON NEURAL NETWORKS (IJCNN '04)

July 25-29, 2004; registration deadline: May 31st

Budapest, Hungary

<http://www.conferences.hu/budapest2004/>



## Books and Journals

### International Journal of Humanoid Robotics (IJHR)

ISSN: 0219-8436

Subjects: Including the mind, body and applications of humanoid robotics

Vol. 1, no. 1 (April 2004) has been published. The entire first issue is available online at <http://www.worldscinet.com/ijhr.html>.

To subscribe or for contribution of papers to the journal, please also visit the website



### Computational Developmental Psychology

By Thomas R. Schultz

MIT Press, May 3rd, 2003

Five Cambridge Center

Cambridge, MA 02142-1493

ISBN: 026219483X

### Rethinking Innateness

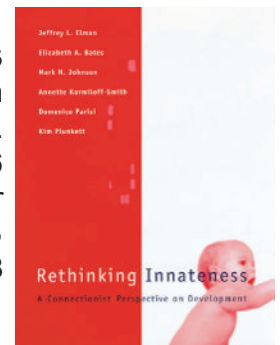
By Jeffery L. Elman and Elizabeth A. Bates, et al.

MIT Press, October 15th, 1996

Five Cambridge Center

Cambridge, MA 02142-1493

ISBN: 0262050528



## Glossary

**Autonomous mental development** was coined during the drafting stage of the paper: J. Weng, J. McClelland, A. Pentland, O. Sporns, I. Stockman, M. Sur and E. Thelen, "Autonomous Mental Development by Robots and Animals," *Science*, vol. 291, no. 5504, pp. 599 - 600, Jan. 26, 2000. The term means that humans, higher animals and artificial systems develop perceptual, cognitive, behavioral, and other mental skills through autonomous interactions with the environment using its sensors and effectors.

**Scaffolding** is the process of using developed simple capabilities to further develop more complex capabilities, through further experience (with or without a teacher) without the need of manual modification of the developmental program. Human teachers typically "arrange experience," rather than didactic teaching. Lev Vygotsky proposed the concept of "zone of proximal development" (ZPD) which is a latent learning gap between what a child can do on his or her own and what can be done with the help of a teacher. Wood, Burner & Ross later used the term "scaffolding" to describe such an instructional support through which child can extend or construct current skills to higher levels of competence. Through this process, the scaffolding (arranged experience) is slowly removed.