

## Invited Speakers

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**Igor Aleksander, Prof.**

Professor Emeritus and Senior Research Investigator,  
Imperial College, London.

**Area of research / interest:**

Phenomenal and Virtual Approaches to Machine  
Consciousness.

**Short list of latest publications relevant to this topic:**

- *'The World In My Mind My Mind In the World: Key Mechanisms of Consciousness in Humans, Animals and Machines'*. Imprint Academic, 2005.
- *'Machine Consciousness'*. *Scholarpedia*, 2008.



**Raúl Arrabales Moreno, MSc.**

Teaching Assistant,  
Universidad Carlos III de Madrid.

**Area of research / interest:**

Machine consciousness and cognitive robotics.

**Short list of latest publications relevant to this topic:**

- Arrabales, R. Ledezma, A. and Sanchis, A. 'Criteria for Consciousness in Artificial Intelligent Agents'. *Proceedings of the ALAMAS+ALAg Workshop at AAMAS 2008*. pp. 57-64.
- Arrabales, R. and Sanchis, A. 'Applying Machine Consciousness Models in Autonomous Situated Agents'. *Pattern Recognition Letters*. Volume 29. Issue 8. pp. 1033-1038. June 2008.
- Arrabales, R. Ledezma, A. and Sanchis, A. 'Modelling Consciousness for Autonomous Robot Exploration'. In *Lecture Notes in Computer Science Series*, Vol. 4527. 2007. pp. 51-60.
- Arrabales, R. and Sanchis, A. 'A Machine Consciousness Approach to Autonomous Mobile Robotics'. In the *5th International Cognitive Robotics Workshop. AAAI-06*. Boston, MA. July 2006.



**Will Browne, Dr.**

Lecturer in Cybernetics,  
University of Reading.

**Area of research / interest:**

Evolutionary Computation – Learning Classifier Systems  
including application as Cognitive Systems.

**Short list of latest publications relevant to this topic:**

- Kazuhiko Kawamura, Will Browne, "Cognitive Robotics", Book Chapter in *Encyclopedia of Complexity and System Science*. Editor-in-Chief: Bob Meyers, Springer, to appear in 2008.
- Paul. Baxter and Will. Browne. Towards a developmental memory-based and embodied cognitive architecture, *Epigenetic Robotics*, July 2008.
- Jim Wyatt, Will Browne, Mark Gasson & Kevin Warwick, "A study of factors influencing the adoption of mass market consumer robotic products" to appear in *IEEE Robotics and Automation Society Magazine*, Editor S.Stramigioli, March 2008.
- Will Browne, Dan Scott and Charalambos Ioannides, "Abstraction for Genetics-based Reinforcement Learning", in *Reinforcement Learning: Theory and Applications*", editors Cornelius Weber, Mark Elshaw and Norbert Michael Mayer, Advanced Robotic Systems Publishing, Vienna, Austria, EU, January 2008.
- Charalambos Ioannides, Will Browne. (2007) "Investigating Scaling of an Abstracted LCS Utilising Ternary and S-Expression Alphabets". In: *Learning Classifier Systems, 10th International Workshop, IWLCS 2007*, London, UK, July 7-11, 2007.
- Browne, W. N. and Tingley, C., "Developing an Emotion-Based Architecture for Autonomous Agents.", *Third International Conference on Autonomous Robots and Agents (ICARA 2006)*, pp 225-230, 12th-14th December 2006, Palmerston North, New Zealand.
- Alex McMahon, Dan Scott, Paul Baxter, Will Browne, "An Autonomous Explore/Exploit Strategy" in Mark Bishop and Slawek Nasuto, Exploration vs. Exploitation in Naturally Inspired Search, in Tim Kovacs and James Marshall, *Proceedings of AISB'06: Adaptation in Artificial and Biological Systems*, Bristol, pp 192-201, 4-6 April 2006.



**Antonio Chella, Prof.**

Professor in Robotics,  
Universita' di Palermo.

**Area of research / interest:**

Machine consciousness, cognitive architectures for robot  
perception.

**Short list of latest publications relevant to this topic:**

- Antonio Chella, Marcello Frixione and Salvatore Gaglio: A Cognitive Architecture for Robot Self-Consciousness, *Artificial Intelligence in Medicine*, 2008 (in press).

- Antonio Chella, Perception Loop and Machine Consciousness, *APA Newsletter on Philosophy and Computers*, 2008 (in press).
- Antonio Chella, Irene Macaluso: Higher-Order Perception Loop, in *Proc. of BICS 2008 - Brain Inspired Cognitive Systems*, 2008.
- Antonio Chella and Salvatore Gaglio: A Cognitive Approach to Robot Self-Consciousness, in: A. Chella, R. Manzotti (eds.) *Proc. of the AAAI Fall Symposium on AI and Consciousness*, AAAI Press, Menlo Park, CA 2007
- Irene Macaluso and Antonio Chella: Machine Consciousness in CiceRobot, a Museum Guide Robot, in: A. Chella, R. Manzotti (eds.) *Proc. of the AAAI Fall Symposium on AI and Consciousness*, AAAI Press, Menlo Park, CA, 2007.
- Antonio Chella: Towards Robot Conscious Perception, in: Antonio Chella, Riccardo Manotti (eds.) *Artificial Consciousness*, Imprint Academic, Exeter, UK, 2007.
- Antonio Chella, Irene Macaluso: Sensations and Perceptions in "Cicerobot", a Museum Guide Robot, in: *Proc. of BICS 2006 - Brain Inspired Cognitive Systems*, 2006.



### **Ron Chrisley, Dr.**

Reader in Philosophy / Department of Informatics Director,  
Centre for Research in Cognitive Science,  
University of Sussex.

#### **Area of research / interest:**

Use of robotic models of vision to specify the content of experience. Affective cognitive architectures. Philosophy of machine consciousness. Architectural explanations of qualia.

#### **Short list of latest publications relevant to this topic:**

- Chrisley, R. (2008; in press). "Philosophical foundations of artificial consciousness", *Artificial Intelligence in Medicine*.
- Chrisley, R. and Parthemore, J. (2007a). "Synthetic Phenomenology: Exploiting Embodiment to Specify the Non-Conceptual Content of Visual Experience", *Journal of Consciousness Studies* 14(7):44-58.
- Chrisley, R. and Parthemore, J. (2007b). "Robotic Specification of the Non-Conceptual Content of Visual Experience", *Proceedings of the AAAI Fall Symposium on "Consciousness and Artificial Intelligence: Theoretical foundations and current approaches"*, Washington DC, 8-11 November 2007.
- Chrisley, R., Clowes, R. W., & Torrance, S. (2005). "Next-generation approaches to machine consciousness". In R. Chrisley, R. W. Clowes & S. Torrance (eds.), *Proceedings of the AISB05 Symposium on Next Generation approaches to Machine Consciousness: Imagination, Development, Intersubjectivity, and Embodiment*. Available as Cognitive Science Research Paper 574.
- Sloman, A., Chrisley, R. and Scheutz, M. (2005) "The architectural basis of affective states and processes", Fellous, J. and Arbib, M. (eds) *Who needs emotions?: The brain meets the robot*. Oxford University Press, pp 203-244. ISBN 0-19-516619-1
- Sloman, A. and Chrisley, R. (2003) "Virtual machines and consciousness". *Journal of Consciousness Studies* 10: 4-5, special issue on machine consciousness. ISBN 0-907845-24X ISSN 1355-8250.



**David Gamez**

PhD Student at the Department of Computing and Electronic Systems, University of Essex.

**Area of research / interest:**

Machine consciousness, synthetic phenomenology and spiking neural networks.

**Short list of latest publications relevant to this topic:**

- Gamez, D. (2008). Progress in Machine Consciousness. *Consciousness and Cognition*, doi: 10.1016/j.concog.2007.04.005, forthcoming in 2008.
- Gamez, D. (2007). *What We Can Never Know*. London: Continuum.
- Gamez, D. (2007). SpikeStream: A Fast and Flexible Simulator of Spiking Neural Networks. *Proceedings of ICANN 2007*. Joaquim Marques de Sá Luís A. Alexandre, Wodzislaw Duch and Danilo P. Mandic (Eds.). Part 1, Volume 4668, pp. 370-379. Lecture Notes in Computer Science, Springer Verlag.
- Gamez, D. Newcombe, R., Holland, O. and Knight, R. (2006). Two Simulation Tools for Biologically Inspired Virtual Robotics. *Proceedings of the IEEE 5th Chapter Conference on Advances in Cybernetic Systems*, Sheffield, pp. 85-90.
- Gamez, D., Taffler, S. Delbruck, T. and Ponulak, F. (2006). A Distributed Saliency System using Ethernet AER. *Report on the 2006 Workshop on Neuromorphic Engineering*, Telluride, pp. 45-52, available at: [http://ine-web.org/fileadmin/templates/\\_docs/report06\\_2.pdf](http://ine-web.org/fileadmin/templates/_docs/report06_2.pdf).
- Gamez, D. (2006). The XML Approach to Synthetic Phenomenology. In Chrisley, R., Clowes, R., and Torrance, S. (eds.), *Proceedings of the AISB06 Symposium on Integrative Approaches to Machine Consciousness*, Bristol, pp. 128-35.
- Gamez, D. (2005). An Ordinal Probability Scale for Synthetic Phenomenology. In R. Chrisley, R. Clowes, and S. Torrance (eds.), *Proceedings of the AISB05 Symposium on Next Generation approaches to Machine Consciousness*, Hatfield, pp. 85-94.



**Ben Goertzel, Dr.**

CEO, Novamente LLC, Rockville, Maryland, USA.

**Area of research / interest:**

Artificial general intelligence, systems theory of mind, physically and virtually embodied intelligent agents.

**Short list of latest publications relevant to this topic:**

- Goertzel, Ben (2006). *The Hidden Pattern: A Patternist Philosophy of Mind*, Brown-Walker Press.
- Goertzel, Ben; Aam, O.; Smith, F.T.; Palmer, K. Mirror Neurons, Mirrorhouses, and the Algebraic Structure of the Self. *Cybernetics & Human Knowing*, Volume 15, Number 1, 2008 , pp. 9-28(20)
- Goertzel, Ben. A Pragmatic Path Toward Endowing Virtually-Embodied AIs with Human-Level Linguistic Capability, *Special Session on Human-Level Intelligence*,

*IEEE World Congress on Computational Intelligence (WCCI) Hong Kong, 2008*

- Goertzel, Ben, Cassio Pennachin, Nil Geissweiller, Moshe Looks, Andre Senna, Ari Heljakka, Welter Silva, Carlos Lopes. An Integrative Methodology for Teaching Embodied Non-Linguistic Agents, Applied to Virtual Animals in Second Life, in *Proceedings of the First AGI Conference*, Ed. Wang et al, IOS Press
- Goertzel, Ben, Moshe Looks and Cassio Pennachin (2004). Novamente: An Integrative Architecture for Artificial General Intelligence. *Proceedings of AAAI Symposium on Achieving Human-Level Intelligence through Integrated Systems and Research*, Washington DC, August 2004.



**Pentti Haikonen, Dr.**

Principal Scientist, cognitive technology,  
Nokia Research Center.

**Area of research / interest:**

Artificial Intelligence, cognitive information processing,  
machine cognition, cognitive robots, electronic circuits for  
the above.

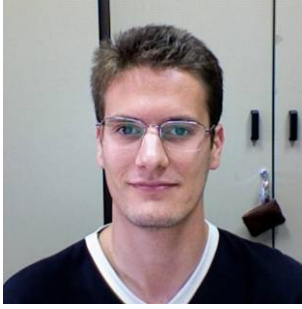
**Short list of latest publications relevant to this topic:**

- Haikonen Pentti O A: *Robot Brains; circuits and systems for conscious machines.* John Wiley & Sons, UK, 2007.
- Haikonen, P. O. A. (2007). Essential Issues of Conscious Machines. In *Journal of Consciousness Studies*, Volume 14, No. 7, pp. 72–84.
- Haikonen Pentti O A: *The Cognitive Approach to Conscious Machines.* Imprint Academic, UK, 2003.



**Germund Hesslow, Prof.**

Department of Experimental Medical Science,  
Neuroscience Section, Lund University.



**Carlos Hernández**

Industrial Engineer, PhD Student,  
Universidad Politécnica de Madrid.

**Area of research / interest:**

Engineering approaches to machine consciousness.

**Short list of latest publications relevant to this topic:**

- Ignacio López, Ricardo Sanz and Carlos Hernández. Architectural Factors for Intelligence in Autonomous Systems. *Evaluating Architectures for Inteligence*. AAAI Workshop. Vancouver, B.C. July 22-23, 2007.
- Ricardo Sanz, Ignacio López and Carlos Hernández. Self-awareness in Real-time Cognitive Control Architectures. *AI and Consciousness: Theoretical Foundations and Current Approaches*. AAAI Fall Symposium 2007. Washington, DC. 8-11 November, 2007.
- Ricardo Sanz, Ignacio López, Manuel Rodríguez, Carlos Hernández. Principles for Consciousness in Integrated Cognitive Control. *Neural Networks*, December 2007.



**Yasuo Kinouchi, Prof.**

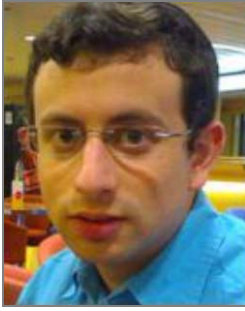
Professor, Department of Information Systems,  
Tokyo University of Information Sciences.

**Area of research / interest:**

Artificial consciousness, neural computing, computer architecture, and large scale parallel and distributed processing.

**Short list of latest publications relevant to this topic:**

- Kinouchi, Y., Masuda, K., and Inabayashi, S.(2008). A model of consciousness and self based on simple abstracted brain-like neural network system. *ASSC 12th Annual Meeting*, June 2008.
- Kinouchi, Y., Masuda, K., and Inabayashi, S.(2006). An Architecture for an Adaptive System with Primitive Concept Formation and Consciousness. *International Joint Conference on Neural Networks (IJCNN'06)*.
- Kinouchi, Y., Masuda, K., and Inabayashi, S.(2006). Multi-module neural network system with concept formation and primitive consciousness, *Proc. Artificial Life and Robotics (AROB11th)*.
- Kinouchi, Y., and Komiyama, T. (2005). A Study of the basic concept of information in a complex system, *Proc. Artificial Life and Robotics (AROB10th)*.
- Kinouchi, and Y., Sasyo, T., Mizutani, M., and Inabayashi, S.(2001).A structure of an associative memory system with concept formation based on mutual feature reactions, *International Joint Conference on Neural Networks (IJCNN'01)*.



**Emmanuel Lesser**

Junior Researcher, e-Lab, AMMI Research Group,  
University College of Antwerp.

**Area of research / interest:**

Artificial Intelligence, neural networks, speech recognition,  
emotion recognition and machine consciousness.

**Short list of latest publications relevant to this topic:**

- Lesser, E., Dams, T., Goossens, M., "Emotion Recognition in Speech Using a Modified version of the Median-Cut Algorithm", *30th Annual German Conference on Artificial Intelligence, Workshop Emotion & Computing*, Osnabrück (2007).
- Lesser, E., Schaeps, T., "EMG Analysis in Multilingual Speech Applications and the Development of Neural Networks for the Implementation of Conscious Entities in Multimedia and Educational Environments", University College of Antwerp, Faculty of Applied Engineering, June 2008.



**Riccardo Manzotti, PhD.**

Assistant Professor in Psychology,  
IULM University, Milan.

**Short list of latest publications relevant to this topic:**

- Manzotti, R. (2008), "A Process-Oriented View of Qualia" in *The Case for Qualia*, E. Wright, Ed., Cambridge (Mass.), MIT Press: 175-190.
- Manzotti, R. and V. Tagliascio (2008), "Artificial Consciousness: A Discipline Between Technological and Theoretical Obstacles". *Journal of Artificial Intelligence and Medicine (Special Issue on Artificial Consciousness)*.
- Chella, A. and R. Manzotti (2007), *Artificial Consciousness*, Exeter (UK), Imprint Academic.
- Manzotti, R. (2006a), "An alternative process view of conscious perception". *Journal of Consciousness Studies* 13(6): 45-79.
- Manzotti, R. (2006b), "Consciousness and existence as a process". *Mind and Matter* 4(1): 7-43.
- Manzotti, R. (2006c), "A radical externalist approach to consciousness: the enlarged mind" in *Mind and Its Place in the World. Non-reductionist Approaches to the Ontology of Consciousness*, A. Batthyany and A. Elitzur Eds., Frankfurt, Ontos-Verlag: 197-224.
- Manzotti, R. (2003), "A process based architecture for an artificial conscious being" in *Process theories*, J. Seibt, Ed., Dordrecht, Kluwer Academic Press, *Process Theories: Crossdisciplinary studies in dynamic categories*: 285-312.



**Hugo Gravato Marques**

PhD Student,  
University of Essex.

**Area of research / interest:**

Natural and artificial Cognition, imagination, consciousness and vision.

**Short list of latest publications relevant to this topic:**

- Marques, H.G. and Holland, O. (2008). Architectures for Functional Imagination. *In Neurocomputing*, in press.
- Marques, H.G.; Newcombe, R. and Holland, O. (2008). A Modelling Framework for Functional Imagination. In *Proceedings of AISB2008: Communication, Interaction and Social Intelligence*, Aberdeen, Scotland.



**Uma Ramamurthy, Ph.D.**

Post-doctoral fellow in the CCRG group,  
Institute for Intelligent Systems, University of Memphis.

**Area of research / interest:**

Modeling perception processes, conceptual learning, self and memory systems for cognitive software agents.

**Short list of latest publications relevant to this topic:**

- Stan Franklin, Uma Ramamurthy, Sidney K. D'Mello, Lee McCauley, Aregahegn Negatu, Rodrigo Silva L., and Vivek Datla, LIDA: A Computational Model of Global Workspace Theory and Developmental Learning, *AAAI 2007 Fall Symposium – AI and Consciousness: Theoretical Foundations and Current Approaches*, Washington, D.C., November 2007.
- Bernard J. Baars, Uma Ramamurthy, and Stan Franklin, How deliberate, spontaneous and unwanted memories emerge in a computational model of consciousness, a chapter in *Involuntary Memory* (Editor: John H. Mace), Blackwell Publishing, 2007.
- Stan Franklin and Uma Ramamurthy, Motivations, Values and Emotions: 3 sides of the same coin, *Proceedings of the Sixth International Workshop on Epigenetic Robotics*, Paris, France, September 2006, Lund University Cognitive Studies, 128; p. 41-48.
- Uma Ramamurthy, Sidney K. D'Mello, and Stan Franklin, Realizing Forgetting in a Modified Sparse Distributed Memory System, *The 28th Annual Conference of the Cognitive Science Society*, Vancouver, BC, Canada, July 2006, p. 1992-1997.



**Ricardo Sanz, Prof.**

Professor in Systems Engineering and Automatic Control, Universidad Politécnica de Madrid.

**Area of research / interest:**

Engineering approaches to machine consciousness.

**Short list of latest publications relevant to this topic:**

- Ricardo Sanz, Ignacio López and Carlos Hernández. Self-awareness in Real-time Cognitive Control Architectures. *AI and Consciousness: Theoretical Foundations and Current Approaches. AAAI Fall Symposium 2007*. Washington, DC. 8-11 November, 2007.
- Ricardo Sanz, Ignacio López and Julita Bermejo-Alonso. A Rationale and Vision for Machine Consciousness in Complex Controllers. In *Artificial Consciousness*. Antonio Chella and Riccardo Manzotti (Eds.) Imprint Academia. Exeter, 2007.
- Ricardo Sanz, Ignacio López, Manuel Rodríguez, Carlos Hernández. Principles for Consciousness in Integrated Cognitive Control. *Neural Networks*, December 2007.
- R. Sanz, I. López, J. Bermejo, R. Chinchilla and R.P. Conde. Self-X: The Control Within. *IFAC World Congress*. Praga, July 2005.
- Ricardo Sanz, Ignacio López, Juan Escasany and Rafael Chinchilla. Meaning Generation and Artificial Wisdom. *IEEE International Conference Integration of Knowledge Intensive Multi-Agent Systems*. Boston, USA. 2003.
- Ricardo Sanz and Alexander Meystel. Self Identity in Control Systems. *6th Joint Conference on Information Sciences*. JCIS 2003. Durham, USA. 8-14 March 2002.
- R. Sanz, F. Matía and S. Galán. Fridges, Elephants, and the Meaning of Autonomy and Intelligence. *IEEE Symposium on Intelligent Control. ISIC'2000*. Patras, Greece. 2000.



**Harri Valpola, D.Sc.**

Academy Research Fellow, Department of Biomedical Engineering and Computational Science, Helsinki University of Technology.

**Area of research / interest:**

Brain-based cognitive architecture, computational neuroscience, Robotics, Development of representations, attention, motor control, Reinforcement learning, cognition.

**Short list of latest publications relevant to this topic:**

- A. Yli-Krekola and H. Valpola. Computational model of co-operating covert attention and learning. *Fifth Nordic Neuroinformatics Workshop*, Espoo, Finland, p. 34, 2007.
- M. Pihlaja and H. Valpola. A model of cerebellar automation of voluntary basal-ganglia control. *Fifth Nordic Neuroinformatics Workshop*, Espoo, Finland, p. 29, 2007.

- I. Aaltonen and H. Valpola. Cerebellar model tested in control of a load-carrying robot. *Fifth Nordic Neuroinformatics Workshop*, Espoo, Finland, p. 16, 2007.
- T. J. Lukka and H. Valpola. Cerebellar model for coordination. *Fifth Nordic Neuroinformatics Workshop*, Espoo, Finland, p. 25, 2007.
- H. Valpola. Learning anticipatory behaviour using a simple cerebellar model. In *Proceedings of the Ninth Scandinavian Conference on Artificial Intelligence*, SCAI 2006, Espoo, Finland, pp. 135-142, 2006.
- H. Valpola. Development of representations, categories and concepts – a hypothesis. In *Proceedings of the 6th IEEE International Symposium on Computational Intelligence in Robotics and Automation*, CIRA 2005, Espoo, Finland, pp. 593-599, 2005.

### **Markku Åberg, D. Sc. (Tech.)**

Chief research scientist,

VTT Technical Research Centre of Finland, Sensing and Wireless Devices.

#### **Short list of latest publications relevant to this topic:**

- Rantala, Arto; Haikonen, Pentti; Åberg, Markku. An associative neuron group microchip with analog EEPROM weight matrix in a standard 0.35 um CMOS, *Proceedings of the 24th Norchip Conference*. Linköping, Sweden, 20-21 November, (2006), 117-120.
- Rantala, Arto; Sopenen, Matti; Åberg, Markku. Implementation experiments of analog nonvolatile memory with a standard 0.35 mm CMOS. *Proceedings 22nd Norchip Conference*, Oslo, Norway, 8. - 9.11.2004. Technodata A/S, Admiralgate 24, DK-1066 Copenhagen K, Denmark (2004), p. 71-74.
- Rantala, Arto; Franssila, Sami; Kaski, Kimmo; Lampinen, Jouko; Åberg, Markku; Kuivalainen, Pekka. Improved neuron MOS-transistor structures for integrated neural network circuits, *IEE Proceedings*. vol. 148 (2001) 1, s. 25 - 34.

### **Arto Rantala**

Research scientist,

VTT Technical Research Centre of Finland, Sensing and Wireless Devices.

#### **Short list of latest publications relevant to this topic:**

- Rantala, Arto; Haikonen, Pentti; Åberg, Markku. An associative neuron group microchip with analog EEPROM weight matrix in a standard 0.35 um CMOS, *Proceedings of the 24th Norchip Conference*. Linköping, Sweden, 20-21 November, (2006), 117-120
- Rantala, Arto; Sopenen, Matti; Åberg, Markku. Implementation experiments of analog nonvolatile memory with a standard 0.35 mm CMOS. *Proceedings 22nd Norchip Conference*, Oslo, Norway, 8. - 9.11.2004. Technodata A/S, Admiralgate 24, DK-1066 Copenhagen K, Denmark (2004), p. 71-74.
- Rantala, Arto; Franssila, Sami; Kaski, Kimmo; Lampinen, Jouko; Åberg, Markku; Kuivalainen, Pekka. Improved neuron MOS-transistor structures for integrated neural network circuits, *IEE Proceedings*. vol. 148 (2001) 1, s. 25 - 34.