Mikhail S. Burtsev

CONTACT INFORMATION

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RESEARCH INTERESTS

Neuromorphic and cognitive systems; Evolution of cognition; Role of learning in evolution; Selectionist theories of learning; Growth of complexity in adaptive systems

EDUCATION

Ph.D., Computer Simulations and Numerical Methods
Keldysh Institute of Applied Mathematics of Russian Academy of Sciences (2005), Moscow, Russia

M.S., Semiconductor Engineering,
Moscow Power Engineering Institute (2000), Moscow, Russia

B.S., Semiconductor Engineering,
Moscow Power Engineering Institute (1998), Moscow, Russia

RESEARCH EXPERIENCE

Head of the Neuromorphic Cognitive Systems lab — Jan. 2011 – present
Department of Neuroscience,
Kurchatov NBIC Centre, Moscow, Russia

Senior Research Scientist — Jan. 2007 – present
Department of systems development,
P.K.Anokhin Institute of Normal Physiology of RAMS, Moscow, Russia

Research Scientist — Jul. 2003 – present
Department of non-linear dynamics,
Keldysh Institute of Applied Mathematics of RAS, Moscow, Russia

Senior Academic Visitor — Mar. – Apr. 2007
Wolfson College, University of Cambridge, Cambridge, UK — Apr. – May 2008
Host: Prof. Patrick Bateson

HONORS AND AWARDS

Russian Basic Science Support Foundation Grant	2006-2007
Russian Fund for Basic Research Grant (#03-06-06030)	2003
Russian Fund for Basic Research Grant (#02-06-06028)	2002
Santa Fe Institute Complex Systems Summer School (CSSS), Budapest	2001
Outstanding Graduate Student Award, Keldysh Institute of Applied Mathematics of RAS	2001

PEER-REVIEWED PUBLICATIONS

Burtsev M.S. (2012). Adaptive learning through variation and selection. In Seel, Norbert M. (Ed.) Encyclopedia of the Sciences of Learning, vol.1, p. 116-118.

Komarov, M.A., Osipov G.V., Burtsev M.S. (2010) Adaptive functional systems: Learning with chaos. Chaos 20(4), 045119.

Burtsev M. (2008). Basic principles of adaptive learning through variation and selection. In Bullock S. et al. (eds.) *Artificial Life XI*, pp. 88-93. MIT Press, Cambridge, MA.

Krivenko S., Burtsev M. (2007) Simulation of the Evolution of Aging: Effects of Aggression and Kin-Recognition. In F. Almeida e Costa et al. (eds.): *ECAL 2007, Lecture Notes in Computer Science* 4648, pp. 84-92.

Red'ko V.G., Anokhin K.V., Burtsev M.S., Manolov A.I., Mosalov O.P., Nepomnyashchikh V.A., Prokhorov D.V. (2007) Project "Animat Brain": Designing the Animat Control System on the Basis of the Functional Systems Theory. In Butz M.V. et al. (Eds.): *Anticipatory Behavior in Adaptive Learning Systems, Lecture Notes in Artificial Intelligence* 4520, pp. 94-107.

Burtsev M., Turchin P. (2006) Evolution of cooperative strategies from first principles, *Nature* 440, pp. 1041-1044.

Burtsev M.S. (2005) Artificial Life Meets Anthropology: A Case of Aggression in Primitive Societies. In Capcarrere M. et al. (Eds.): *ECAL 2005, Lecture Notes in Computer Science* 3630, pp. 655 – 664.

Burtsev M.S. (2004) Tracking the Trajectories of Evolution. *Artificial Life* 10(4), pp. 397-411.

Burtsev M., Korotaev, A. (2004) Evolutionary Agent-Based Model of Pre-State Warfare Patterns: Cross-Cultural Tests. *World Cultures* 15, pp. 17-38.

Red'ko V.G., Prokhorov D.V., Burtsev M.S. (2004) Theory of Functional Systems, Adaptive Critics and Neural Networks. In *Proceedings of IEEE International Joint Conference on Neural Networks 2004*, pp. 1787-1792.

Burtsev M.S. (2003) Measuring the Dynamics of Artificial Evolution. Banzhaf W. et al. (Eds.): *ECAL 2003, Lecture Notes in Computer Science* 2801, pp. 580-587.

Burtsev M.S., Gusarev R.V., Red'ko V.G. (2002) Investigation of Mechanisms of Goal-Oriented Adaptive Control. *Journal of Computer and System Sciences International* 41(6), pp. 890-898.

PREPRINTS

Lakhman K., Burtsev M. (2012). Neuroevolution Results in Emergence of Short-Term Memory for Goal-Directed Behavior. arXiv:1204.3221 (april 14).

Naumenko S., Podlazov A., Burtsev M., Malinetsky G. (2007) On the optimality of the standard genetic code: the role of stop codons. arXiv:0712.4219v1 [q-bio.PE]

Burtsev M.S., Red'ko V.G., Gusarev R.V. (2001) Alife Model of Evolutionary Emergence of Purposeful Adaptive Behavior. arXiv:cs/0110021v1 [cs.NE]

INVITED PRESENTATIONS AND WORKSHOPS

Chinese Russian Workshop on Neuroscience, ION CAS, Shanghai, China	2011
1st International Workshop on Guided Self-Organisation, CSIRO, Sydney, Australia	2008
ISTC-RIKEN BSI Workshop, RIKEN BSI, Saitama, Japan	2008
Seminar, AI Methodology, Perm State U, Perm, Russia	2007
Seminar, Ecobionics, Moscow State Technical U, Moscow, Russia	2007
Seminar, Department of Neurophysiology, Ruhr-U Bochum, Bochum, Germany	2006
Evolution and Development Workshop, The Leir Program of Clark U, Luxembourg	2006

CONFERENCE PRESENTATIONS

Neuroinformatics, Moscow, Russia. Oral	2011
7th Forum of European Neuroscience, Amsterdam, Netherlands. Poster	2010
Neuroinformatics, Moscow, Russia. Oral	2010
Artificial Life XI, Winchester, UK. Oral	2008
9th European Conference on Artificial Life, Lisbon, Portugal. Poster	2007
2nd Conference on Mathematical Modeling of History, Moscow, Russia. Oral	2007
Modern Problems of Biological Evolution, Moscow, Russia. Poster	2007
Neuroinformatics, Moscow, Russia. Poster	2007
5th Forum of European Neuroscience, Vienna, Austria. Poster	2006
History and Mathematics, Moscow, Russia. Oral	2006
Neuroinformatics, Moscow, Russia. Oral	2005
8th European Conference on Artificial Life, Canterbury, UK. Oral	2005
9th Neural Computation and Psychology Workshop, Plymouth, UK. Poster	2004
Hierarchy and Power in the History of Civilizations Conference, Moscow, Russia. Oral	2004
National AI Conference, Tver, Russia. Oral	2004
7th European Conference on Artificial Life, Dortmund, Germany. Poster	2003
Neuroinformatics, Moscow, Russia. Oral	2002
National AI Conference, Kolomna, Russia. Oral	2002

ACADEMIC SERVICE

Reviewer

Grants: Future and Emerging Technologies, ICT-FP7

Journals: PLoS One, Evolutionary Computation, Journal of Theoretical Biology

Conferences: International Joint Conference on Neural Networks, Neuroinformatics

Program Committee

1st International Workshop on Guided Self-Organisation, CSIRO, Sydney, Australia

OTHER ACTIVITIES	*Member of editorial board*, "Troitskii Variant", independent newspaper of Russian scientific community (2009-2010) *Science writer*, "Computerra", weekly computer magazine, (2002-2003)