

Publication list for Rüdiger Kupper

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1 Dissertation

- [1] Rüdiger Kupper. *Konzeptionelle Modellierung geometrischer Invarianzen in der visuellen Wahrnehmung von Primaten – Situativ gesteuerte Complex-Bildung als Grundlage invarianter Zellantworten (Conceptual modelling of geometric invariances in primate visual perception – Situation controlled complex-formation as a basis for invariant cell responses)*. Dissertation, Faculty of Physics, Philipps-Universität Marburg, Germany, November 2004. <http://archiv.ub.uni-marburg.de/diss/z2004/0639/>.

2 Journal articles

- [2] Marc-Oliver Gewaltig, Andreas Richter, and Rüdiger Kupper. BLISS: towards the simulation of brain-like systems. *Neurocomp.*, 44–46:805–810, June 2002.
- [3] Rüdiger Kupper, Marc-Oliver Gewaltig, Ursula Körner, and Edgar Körner. Spike-latency codes and the effect of saccades. *Neurocomp.*, 65–66C:189–194, 2005. Special issue: Computational Neuroscience: Trends in Research 2005 – Edited by E. de Schutter.
- [4] Rüdiger Kupper, Andreas Knoblauch, Marc-Oliver Gewaltig, Ursula Körner, and Edgar Körner. Simulations of signal flow in a functional model of the cortical column. *Neurocomp.*, 70(10–12):1711–1716, June 2007. doi:10.1016/j.neucom.2006.10.085.
- [5] Andreas Knoblauch, Rüdiger Kupper, Marc-Oliver Gewaltig, Ursula Körner, and Edgar Körner. A cell assembly based model for the cortical microcircuitry. *Neurocomp.*, 70(10–12):1838–1842, June 2007. doi:10.1016/j.neucom.2006.10.092.

- [6] Rüdiger Kupper, Michael Schmuker, Ad Aertsen, Thomas Wachtler, Ursula Körner, and Marc-Oliver Gewaltig. How the visual system can detect feature homogeneity from spike latencies. *J. Comp. Neurosci.*, 2007. submitted.

3 Conference Contributions

3.1 Invited Talks

- [7] Rüdiger Kupper, Ursula Körner, and Marc-Oliver Gewaltig. Spike-latency coding of feature homogeneity. In Christian Frings, Axel Mecklinger, Bertram Opitz, Markus Pospeschill, Dirk Wentura, and Hubert D. Zimmer, editors, *Kognitionsforschung 2007. Beiträge zur 8. Jahrestagung der Gesellschaft für Kognitionswissenschaft (Kogwis 2007)*, page 74, Saarbrücken, Germany, March 2007. Shaker Verlag. Invited talk.

3.2 Featured Talks

- [8] Rüdiger Kupper, Andreas Knoblauch, Ursula Körner, Edgar Körner, and Marc-Oliver Gewaltig. Recollection and imagination in a functional model of visual cortex. In *Proceedings of the CNS*2007 conference* [9], page S10. <http://www.biomedcentral.com/1471-2202/8/S2/S10>; doi:10.1186/1471-2202-8-S2-S10; featured talk.

3.3 Talks

- [10] Rüdiger Kupper and Reinhard Eckhorn. A neural network model generating invariance for visual distance. In J. R. Dorronsoro, editor, *Artificial Neural Networks – ICANN 2002. International Conference*, volume 2415 of *Lecture Notes in Computer Science*, pages 93–98, Madrid, Spain, August 2002. Springer. Talk. <http://link.springer-ny.com/link/service/series/0558/bibs/2415/241500933.htm>; <http://link.springer-ny.com/link/service/series/0558/papers/2415/24150093.pdf>.
- [11] Rüdiger Kupper, Marc-Oliver Gewaltig, Ursula Körner, and Edgar Körner. Spike-latency coding of topological feature homogeneity. In *Proceedings of the Conference for Computational Neuroscience CNS*2005*, Madison, WI, USA, 2005. Talk. Article available upon request.
- [12] Andreas Knoblauch, Rüdiger Kupper, Marc-Oliver Gewaltig, Ursula Körner, and Edgar Körner. Design and simulation of a cortical control architecture for object recognition and representational learning. In Tsujino et al. [13], pages 6–13. Article available upon request.

- [14] Rüdiger Kupper, Marc-Oliver Gewaltig, Andreas Knoblauch, Ursula Körner, and Edgar Körner. Spike-latency coding of topological feature homogeneity, and the shaping of synaptic potentials by forward inhibition. In Tsujino et al. [13], pages 30–37. Article available upon request.
- [15] Andreas Knoblauch, Marc-Oliver Gewaltig, Rüdiger Kupper, Ursula Körner, and Edgar Körner. Improving the storage capacity of neocortical associative networks by structural plasticity and hippocampal training. In Sendhoff et al. [16], pages 17–26. Article available upon request.
- [17] Andreas Knoblauch, Friedrich T. Sommer, Marc-Oliver Gewaltig, Rüdiger Kupper, Ursula Körner, and Edgar Körner. A model for structural plasticity in neocortical associative networks trained by the hippocampus. In *Proceedings of the CNS*2007 conference* [9], page S14. doi:10.1186/1471-2202-8-S2-S14; talk.

3.4 Posters

- [18] Rüdiger Kupper, Mirko Saam, and Reinhard Eckhorn. Spatial clustering of receptive fields in retino-cortical mapping. A model with hebbian learning and spiking neurons. In Norbert Elsner and Ulf Eysel, editors, *From Molecular Neurobiology to Clinical Neuroscience. Proceedings of the 1st Göttingen Conference of the German Neuroscience Society*, page 483. Thieme, 1999.
- [19] Marc-Oliver Gewaltig, Andreas Richter, and Rüdiger Kupper. BLISS: Towards the simulation of brain-like systems. In Norbert Elsner and Georg W. Kreutzberg, editors, *The Neurosciences at the Turn of the Century. Proceedings of the 4th Meeting of the German Neuroscience Society 2001. 28th Göttingen Neurobiology Conference*, volume I, page 269. Thieme, 2001.
- [20] Hans Jörg Brinksmeyer, Alexander Gail, Etel Andreu, Rüdiger Kupper, and Reinhard Eckhorn. Neural correction for residual eye movements during ocular fixation? In Norbert Elsner and Georg W. Kreutzberg, editors, *The Neurosciences at the Turn of the Century. Proceedings of the 4th Meeting of the German Neuroscience Society 2001. 28th Göttingen Neurobiology Conference*, volume II, page 584. Thieme, 2001.
- [21] Rüdiger Kupper and Reinhard Eckhorn. A neural mechanism for invariance to viewing-distance. In *2nd Gainfield Conference "Space coding in primates"*, pages 26–27, Kloster Seeon, Germany, May 9–12 2002. Volkswagen-Stiftung. <http://neuro.physik.uni-marburg.de/~bremmer/seeon2002/index.html>.

- [22] Rüdiger Kupper and Reinhard Eckhorn. A neural mechanism for viewing-distance-invariance. In Rolf P. Würtz and Markus Lappe, editors, *Dynamic Perception*, pages 277–282, Berlin, November 2002. infix, Akademische Verlagsgesellschaft Aka GmbH.
- [23] Rüdiger Kupper, Marc-Oliver Gewaltig, Ursula Körner, and Edgar Körner. Spike-latency codes and the effect of saccades. In *Proceedings of the Computational Neuroscience Meeting CNS*2004*, Baltimore, MD, USA, July 2004. Article published in *Neurocomp.* 65-66C, 189-194, 2005.
- [24] Rüdiger Kupper, Andreas Knoblauch, Marc-Oliver Gewaltig, Ursula Körner, and Edgar Körner. Simulations of a columnar architecture for cortical stimulus processing. In Auke Jan Ijspeert, Jonas Buchli, Allen Selverston, Mikhail Rabinovich, Martin Hasler, Wulfram Gerstner, Aude Billard, Henry Markram, and Dario Floreano, editors, *Dynamical Principles for neuroscience and intelligent biomimetic devices – Abstracts of the EPFL-LATSIS Symposium 2006*, pages 101–102, EPFL, Lausanne, March 2006. Latsis foundation, EPFL, Lausanne. ISBN 978-2-8399-0134-5.
- [25] Rüdiger Kupper, Andreas Knoblauch, Ursula Körner, Edgar Körner, and Marc-Oliver Gewaltig. Fast visual responses: Is counting spikes enough? In *Cosyne 2007, 4th Computational and Systems Neuroscience Meeting, Conference and Abstracts* [26], page 189. <http://cosyne.org/c/images/2/2f/Cosyne-poster-II-116.pdf>.
- [27] Andreas Knoblauch, Rüdiger Kupper, Ursula Körner, Edgar Körner, and Marc-Oliver Gewaltig. A model for structural plasticity in neocortical associative networks trained by the hippocampus. In *Cosyne 2007, 4th Computational and Systems Neuroscience Meeting, Conference and Abstracts* [26], page 217. <http://cosyne.org/c/images/0/06/Cosyne-poster-III-15.pdf>.
- [28] Andreas Knoblauch, Friedrich Sommer, Marc-Oliver Gewaltig, Rüdiger Kupper, Ursula Körner, and Edgar Körner. On the collective computational abilities of inhibitory neurons. In *Cosyne 2008, 5th Computational and Systems Neuroscience Meeting, Conference and Abstracts*, page 160, Salt Lake City, Utah, USA, February 2008. http://cosyne.org/cosyne08/posters/COSYNE2008_0046_poster.pdf.

4 Book chapters

- [29] Rüdiger Kupper, Marc-Oliver Gewaltig, Andreas Knoblauch, Ursula Körner, and Edgar Körner. From neurons to cortex: a multi-level

approach to understanding the brain. In Hugo A. Svensson, editor, *Neurocomputing Research Developments*, chapter 2, pages 39–80. Nova Science Publishers, Inc., 2008.

5 Technical reports

- [30] Rüdiger Kupper. BLISS operating system interface – technical report and reference manual. Internal Report HRE-G/FTR 99/10, Honda R&D Europe (Germany), Future Technology Research, D-63073 Offenbach/Main, Germany, 1999.
- [31] Rüdiger Kupper, Marc-Oliver Gewaltig, Ursula Körner, and Edgar Körner. Spike-latency codes and the effect of saccades. Technical Report HRI-EU Report 04-08, Honda Research Institute Europe GmbH, Carl-Legien-Str. 30, D-63073 Offenbach/Main, Germany, 2004.
- [32] Rüdiger Kupper. Spike-time processing in a model of the visual cortex: I. Temporal reference frames, and spike-time homogeneity. Technical Report HRI-EU Report 04-09, Honda Research Institute Europe GmbH, Carl-Legien-Str. 30, D-63073 Offenbach/Main, Germany, 2004.
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- [34] Rüdiger Kupper. SLI library management. Internal Report HRI-EU 06-05, Honda Research Institute Europe GmbH, Carl-Legien-Str. 30, D-63073 Offenbach/Main, Germany, 2006.

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- [16] B. Sendhoff, K. Fujimura, and H. Tsujino, editors. *Proceedings of the 4th HRI Global Workshop on Advances in Computational Intelligence*, Braunschweig, Germany, June 2007. Honda Research Institute Europe, Offenbach, Germany.
- [26] *Cosyne 2007, 4th Computational and Systems Neuroscience Meeting, Conference and Abstracts*, Salt Lake City, Utah, USA, February 2007.
- [9] *Proceedings of the CNS*2007 conference*, volume 8 (suppl 2) of *BMC Neuroscience*, Toronto, CA, July 2007. Biomed Central.