

Susanne Still

Information and Computer Sciences
University of Hawai'i at Mānoa, Honolulu, HI 96822
email: sstill@hawaii.edu
URL: www2.hawaii.edu/~sstill

Date: Oct. 5, 2011.

Current position

Associate Professor. University of Hawai'i at Mānoa, Department of Information and Computer Sciences (ICS).

Previous positions

- 2005-2011 *Assistant Professor.* University of Hawai'i at Mānoa, ICS.
2001-2005 Princeton University, Department of Physics.
- *Research Staff Member.* Theoretical Biophysics Group, [Prof. W. Bialek](#). Department of Physics and Lewis Sigler Institute for Integrative Genomics.
 - *Visiting Research Fellow.* “Forschungsstipendium” by Deutsche Forschungsgemeinschaft (German Research Association), 07/2002 to 08/2003.
- 2000-2001 *Post-Doctoral Researcher*, NEC Research Institute, Princeton. Prof. W. Bialek.
1995-2000 *Research Assistant*, ETH Zürich, Switzerland, Department of Physics and Institute of Neuroinformatics.

Education

- 2000 DR. NAT. SCI., Department of Physics, ETH Zürich, Switzerland.
Advisors: [Dr. M. Mahowald](#), Professors [K. Hepp](#) and [R. Douglas](#).
- 1995 PHYSIK DIPLOM, Universität Hannover, Germany.
1994-95 – *Diplomarbeit* Paul Scherrer Institute, Switzerland.
1993-94 – Studied Physics at *ETH Zürich*, Switzerland (sponsored by scholarship).
1990-93 – Studied Physics at *Universität Hannover*, Germany.
1989-90 Studied *Chinese language and culture (“Sinologie”)* at Freie Universität Berlin, Germany.
Achieved fluency in basic chinese. Language and cultural visit to China, Summer 1991.
1989 ABITUR, Gymnasium Langenhagen, Germany.

Summer Schools

- 2001 *Physics of bio-molecules and cells*, Ecole de Physique Theorique, Les Houches, France.
1999 *Methods in Computational Neuroscience*, Marine Biological Laboratory, Woods Hole, MA.
1997 *Crete Course in Computational Neuroscience*, Institute of Applied Computational Mathematics, Heraklion, Greece.
1996 *Neuromorphic Engineering*, NSF Workshop, Telluride, CO.

Grants and fellowships

- Summer 09 *Junior Fellow*, Collegium Budapest, Institute for Advanced Study, Hungary.
2009 *Visiting Scientist*, Max Planck Institute for Mathematics in the Natural Sciences, Leipzig, Germany.
- Summer 08 *Visitor*, Collegium Budapest, Institute for Advanced Study, Hungary.
2006-2010 *Senior personnel* NSF grant proposal entitled "UBM: Research Experiences in Mathematical Biology". PI: Leslie C. Wilson, Mathematics, University of Hawai'i at Mānoa.
- 2002-03 *Forschungstipendium*, Deutsche Forschungsgesellschaft (German Research Association).
1993-94 "EMS φ S" *Scholarship* for physics studies abroad (in Europe).

Publications

Peer-Reviewed

- 2011 **S. Still** and D. Precup: "An information-theoretic approach to curiosity-driven reinforcement learning". To appear in *Theory in Biosciences*, Special issue: Guided Self-Organization.
- 2011 F. Caccioli, **S. Still**, M. Marsili, I. Kondor: "Optimal Liquidation Strategies Regularize Portfolio Selection". To appear in *The European Journal of Finance*, Special Issue on "New Facets of Economic Complexity in Modern Financial Markets". Available at [arXiv:1004.4169](https://arxiv.org/abs/1004.4169)
- 2010 **S. Still** and I. Kondor: "Regularizing Portfolio Optimization". *New Journal of Physics*, **12** 075034 [075034](https://arxiv.org/abs/075034). Special Issue on "Statistical Physics Modeling in Economics and Finance". Presented at the Third Financial Risks International Forum, Paris, March 25/26, 2010. Also available at [arXiv:0911.1694](https://arxiv.org/abs/0911.1694)
- 2010 **S. Still**, J. P. Crutchfield and C. J. Ellison: "Optimal Causal Inference". *CHAOS* 20 (September 2010). Special Issue on "Intrinsic and Designed Computation: Information Processing in Dynamical Systems", available at [arXiv:0708.1580](https://arxiv.org/abs/0708.1580)
- 2009 **S. Still**: "Information theoretic approach to interactive learning". *EPL* 85 [28005](https://arxiv.org/abs/28005)
- 2009 D. Mandic, **S. Still** and S. C. Douglas: "Duality between widely linear and dual channel adaptive filtering". *ICASSP Proceedings of the 2009 IEEE International Conference on Acoustics, Speech and Signal Processing*, pp: 1729-1732.
- 2006 **S. Still**, K. Hepp and R. J. Douglas: "Neuromorphic Walking Gait Control." *IEEE Transactions on Neural Networks*; **17** (2), 496–508 (2006).
- 2004 **S. Still** and W. Bialek: "How many clusters? An information theoretic perspective." *Neural Computation*, **16**, [2483–2506](https://arxiv.org/abs/2483-2506) (2004).
- 2004 **S. Still**, W. Bialek and L. Bottou: "Geometric Clustering using the Information Bottleneck method." In: *Advances In Neural Information Processing Systems 16*, S. Thrun, L. K. Saul and B. Schölkopf (Editors), MIT Press, Cambridge, MA, (2004) available online at books.nips.cc.
- 2003 E. Schneidman, **S. Still**, M. J. Berry II and W. Bialek : "Network information and connected correlations." *Phys. Rev. Lett.* 91, [238701](https://arxiv.org/abs/238701) (2003).

- 2001 **S. Still**, B. Schölkopf, K. Hepp and R. J. Douglas: “Four-legged Walking Gait Control Using a Neuromorphic Chip Interfaced to a Support Vector Learning Algorithm.” In: *Advances in Neural Information Processing Systems 13*, T. K. Leen, T. Dietterich, and V. Tresp (Editors), MIT Press, Cambridge, MA, pp. 741-747 (2001).
- 1999 **S. Still** and G. LeMasson: “Traveling waves in a ring of three inhibitory coupled model neurons.” *Neurocomputing*, **26-27**, 533-539 (1999).
- 1998 **S. Still** and M.W. Tilden: “Controller for a four legged walking machine.” In: *Neuromorphic Systems: Engineering Silicon from Neurobiology*, L.S. Smith, A. Hamilton (Editors), World Scientific (1998).

Short Article

- 1998 **S. Still** and M.W. Tilden, “Coupled Oscillators and Walking Control: A Hardware Implementation of a Distributed Motor System.” In: *Proceedings of the 26th Göttingen Neurobiology Conference, Volume 2*, N. Elsner and R. Wehner (Editors), Georg Thieme Verlag Stuttgart (1998).

Articles under review

- **S. Still**, A. J. Bell, D. A. Sivak and G. E. Crooks, “Predictive information, memory and dissipation in an adapting Markov system far from thermodynamic equilibrium”. Previously submitted to NIPS 2010. Planning to submit to PRL. Available upon request.
- A. J. Bell and **S. Still** and “Learning out of equilibrium”. Previously submitted to NIPS 2010.
- **S. Still** and J. P. Crutchfield. “Structure or Noise?”. Available at [arXiv:0708.0654](https://arxiv.org/abs/0708.0654) Submitted to EPJB.
- C. W. Hamilton, C. D. Beggan, **S. Still**, M. Beuthe, R. M. C. Lopes, D A. Williams, W. Wright and J. Radebaugh. “Spatial distribution of volcanoes on Io: implications for tidal heating and magma ascent”. Previously submitted to Nature Geoscience, planning to submit to EPSL.

Technical report

- 2006 **S. Still** and W. Bialek: ”Active Learning and optimal predictions”. Technical Report, University of Hawaii, Manoa, Honolulu, USA.

Conference Contributions

- 2006 **S. Still**, M. Dinculescu and D. Precup, “An Information Theoretic Approach for Building Approximate Predictive Models”, workshop on ”Grounding Sensation, Knowledge, and Cognition in Sensori-Motor Experience” at Neural Information Processing Systems 19, Vancouver, BC, Canada.
- 2006 **S. Still**, “Active learning and optimal behavior”, workshop on “Value of Information in Inference, Learning and Decision-Making” at Neural Information Processing Systems 18,

Vancouver, BC, Canada.

- 2001 **S. Still**, A. K. Schenk, B. D. Wright, A. J. Doupe and W. Bialek, “Information theoretic approaches to the analysis of complex natural sounds”, presented at the Gordon Conference “Sensory Coding and the Natural Environment – Probabilistic models of perception”, Mount Holyoke College, MA, USA.
- 1998 C. Collin and **S. Still**, “Towards a Neuronally-Controlled Walking Machine.” 2nd International Conference on Cognitive and Neural Systems, Boston, MA, USA.

Theses

- 2000 **S. Still**, “Walking gait control for four-legged robots.” PhD Thesis, ETH Zürich, Department of Physics.
- 1995 **S. Still**, “Characterization and Optimization of Lithium-Carbon-Intercalation Electrodes for the use in Lithium-Ion-Exchange Batteries.” Diplomarbeit (MSc), University of Hannover, Department of Physics.

Invited Talks

Department Colloquia

- 04/2010 *University of British Columbia, Canada*, Physics Colloquium.
- 03/2010 *University of Victoria, Canada*, Physics Colloquium.
- 01/2007 *University of Hawaii at Mānoa*, Physics Colloquium.
- 04/2005 *University of Hawaii'i at Mānoa*, Honolulu, HI, Math Colloquium.

Conferences

- 01/2011 *Berkeley Mini Stat. Mech. Meeting*, UC Berkeley, CA.
- 01/2011 *Workshop on measures of complexity*, Santa Fe Institute, NM.
- 03/2010 Focus Session Physics of Behavior, *American Physics Society March Meeting*, Portland, OR.
- 09/2009 European Conference on Complex Systems, Warwick (ECCS 09), Workshop on Information, Computation, and Complex Systems.
- 08/2009 *The Second International Conference on Guided Self-Organization (GSO)*, Leipzig, Germany. **Keynote Lecture.**
- 07/2009 *Chaos/Xaoc*, Conference Center of the National Academy of Sciences in Woods Hole, MA.
- 04/2006 *Bellairs Reinforcement Learning Workshop*, Barbados.
- 12/2005 Workshop on “Models of Behavioral Learning”. *Neural Information Processing Systems (NIPS)*, Vancouver, BC, Canada.
- 07/2004 *Kavli Institute for Theoretical Physics (KITP)*, University of California, Santa Barbara. **Program: Understanding the Brain.**
- 12/1998 Workshop on “Learning Chips and Neurobots”. *Neural Information Processing Systems (NIPS)*, Breckenridge, CO.

Summer Schools

- 09/2010 *Eighth Fall Course on Computational Neuroscience*, Bernstein Center for Computational Neuroscience, and Max Planck Institute for Dynamics and Self-Organization, Göttingen, Germany.
- 08/2008 *Sante Fe Institute Complex Systems Summer School* at the Institute of Theoretical Physics, Chinese Academy of Sciences (CAS), Beijing, China.

09/2008 *Ecole Recherche Multimodale d'Information Techniques & Sciences (ERMITES)*; Université du Sud Toulon-Var, Laboratoire des Sciences de l'Information et des Systèmes, Association Française de la Communication Parlée; Giens, France.

Seminars and Talks

10/2011 *University of California at Berkeley*, Redwood Center for Theoretical Neuroscience Seminar.
08/2011 *ETH/UNI Zürich*, Institute for Neuroinformatics, Switzerland.
04/2011 *Santa Fe Institute*, Santa Fe, NM.
09/2010 *University of Edinburgh*, Institute of Perception, Action and Behaviour, Edinburgh, UK.
01/2010 *University of California at Berkeley*, Redwood Center for Theoretical Neuroscience. [Seminar](#).
12/2009 *Universität Köln*, Germany, Physics Department.
11/2009 *International Center of Theoretical Physics (ICTP)*, Trieste, Italy. [Seminar](#).
04/2009 *University of California at Davis*, Computational Science & Engineering Center, Davis, CA.
10/2008 *Max Planck Institute for Biological Cybernetics*, Machine Learning Seminar, Tübingen, Germany.

09/2007 *University of Montreal*, Montreal, Canada. Department of Computer Science.
09/2007 *McGill University*, Montreal, Canada. *McGill-UdeM-MITACS* Machine Learning Seminar.
03/2007 *University of California at Davis*, Computational Science and Engineering Center, Davis, CA.
01/2007 *TU Munich*, Institute of Computer Science, Munich, Germany.
01/2007 *ETH Zürich*, Institute for Neuroinformatics, Zürich, Switzerland.
01/2007 *IDSIA*, Institute for Artificial Intelligence (Istituto Dalle Molle di Studi sull'Intelligenza Artificiale), Lugano, Switzerland.
01/2007 *ETH Zürich*, Institute of Computer Sciences, Zürich, Switzerland.
07/2006 *Max Planck Institute for Biological Cybernetics*, Tübingen, Germany.
06/2006 *McGill University*, Montreal, Canada. Department of Computer Science.
10/2005 *University of Hawai'i, Mānoa*, Honolulu, HI, Medical Informatics, ICS.
09/2005 *University College Dublin*, Dublin, Ireland.
04/2005 *University of Hawai'i, Hilo*, Hilo, HI, Department of Computer Science.
04/2005 *University of Hawai'i, Mānoa*, Honolulu, HI, Department of Electrical Engineering.
04/2003 *Columbia University*, New York, NY, Applied Mathematics Seminar.
03/2003 *University of British Columbia*, Vancouver, Canada, Department of Physics.
08/2003 *Humboldt University*, Berlin, Germany, Theoretical Biology Seminar.
08/2003 *Hamilton Institute, National University of Ireland*, Maynooth, Ireland. Machine Learning and Cognitive Neuroscience Seminar.
08/2003 *University of Hawai'i*, Honolulu, HI. Department of Electrical Engineering.
07/2003 *Max Planck Institute for Biological Cybernetics*, Tübingen, Germany, Machine Learning Seminar.
07/2003 *ETH Zürich*, Switzerland, Institute for Neuroinformatics.
1998 *Max Planck Institute of Fluid Dynamics*, Göttingen, Germany.
1998 *Max Planck Institute of Biological Cybernetics*, Tübingen, Germany.

Invited Participant in Workshops

10/2009 Financial risk, market complexity and regulation, Collegium Budapest, Hungary.
04/2009 NSF: Opportunities and Challenges in Uncertainty Quantification for Complex Interacting systems, University of Southern California.
2001 Snowbird Learning Workshop, Snowbird, Utah.

Teaching experience

Lectures

* indicates new course developed and first taught; Sxx = Spring Semester 20xx; Fxx = Fall Semester 20xx.

- F11 ICS 691: Advanced topics in software: Applications of Machine Learning in Geoscience and Economics.
- F11 ICS 141: Discrete Mathematics.
- S11 ICS 435: Machine Learning.
- S11 ICS 141: Discrete Mathematics.
- F10 ICS 691: Advanced topics in robotics.
- F10 ICS 141: Discrete Mathematics.
- S10 ICS 635: Machine Learning.
- S10 ICS 141: Discrete Mathematics.
- F09 ICS 141: Discrete Mathematics.
- S09 ICS 636*: Information Theory in Machine Learning.
- S09 ICS 141: Discrete Mathematics.
- F08 ICS 635*: Machine Learning. New internet-based course.
- S08 ICS 491*: Introduction to Neuroinformatics and Machine Learning. Added to the catalog as ICS 435.
- S08: ICS 141: Discrete Mathematics.
- S07: ICS 635: Computational Intelligence. Later re-named ICS 635, Machine Learning.
- S06: ICS 691* (special topics): Machine Learning.
- S05: ICS 691* (special topics): Bioinformatics, Machine Learning and Quantitative Biology.

Directed reading and research

- F11 ICS 699: Lisa Miller. Project: Geoinformatics.
- S11 ICS 699: Lisa Miller. Project: Interactive Learning in Robotics.
- F10 ICS 699: Lisa Miller. Project: Document Classification for Astrobiology Research.
- S10 ICS 699: Victor Miagkikh. Project: Implementing and testing Regularized Portfolio Optimization.
- F09 ICS 699: Victor Miagkikh. Project: Finding HMMs with Baum-Welch algorithm: studying optimization issues.
- F09 ICS 699: Daniel Chang. Project: Testing geometric clustering techniques.
- F09 ICS 699: Ben Karsin. Project: Extending the Optimal Causal Inference Algorithm to an Online Algorithm.
- 2007 (Summer) Co-supervision of PhD Student Christopher Ellison, Physics, University of California at Davis. Project: Optimal Causal Inference.
- S07 ICS 699: Jared Takazawa. Project: Multimodal installations (Computers and art).
- S07 ICS 499: Sean Simmons. New approaches to curiosity driven learning.
- F06 ICS 699: Xin Chen. Project: New ideas for exploration in reinforcement learning.
- 2006 (Summer) Co-supervision of Master Student Monica Dinculescu, McGill University, Canada. Project: Implementation of a novel algorithm for constructing approximate predictive models.
- S06 ICS 699: Xin Chen. Project: Gene expression data analysis.
- S06 PhD student Rich Warren. Project: Predictive filtering.
- S06 ICS 499 Student: Nicholas Tachino. Project: Movement analysis and its implications for coaching.
- S05 ICS 699: Yinbin Ge. Project: Microarray analysis.

PhD Students

- 2015 Lisa Miller, Information and Computer Sciences, University of Hawai'i, Mānoa. Advisor. Expected graduation 2011 (MSc), 2015 (PhD).
- 2014 William Wright, Information and Computer Sciences, University of Hawai'i, Mānoa. Advisor. Expected graduation 2014 (PhD).
- 2010 Christopher Hamilton, PhD, Geophysics, University of Hawai'i, Mānoa. External PhD Committee Member.
- 2010 Hunter Hatfield, PhD, Linguistics, University of Hawai'i, Mānoa. External PhD Committee Member.

Other professional activities

Contributed Talks at Conferences

- 12/2005 Workshop on “Value of Information in Inference, Learning and Decision-Making”. *Neural Information Processing Systems (NIPS)*, Whistler, BC, Canada.
- 12/2003 *Neural Information Processing Systems (NIPS)*. Spotlight Presentation. Vancouver, BC, Canada
- 12/2002 Workshop on “Bio-Informatics”. *Neural Information Processing Systems(NIPS)*, Whistler, BC, Canada.

Reviewed articles for

- Neural Computation
- Neural Information Processing Systems (NIPS)
- CHAOS
- European Biophysical Journal (EBJ)
- Computer Vision and Pattern Recognition
- Transactions on Pattern Analysis and Machine Intelligence
- Transactions on Knowledge and Data Engineering

Member of Professional Associations

- Deutsche Physikalische Gesellschaft
 - American Physical Society
- 2005 Participant in the “PRO-SCIENCE” initiative. Published in the German Magazine “Karriere”, and supported by the German academic exchange service, DAAD.

Languages

German and English fluent.

Some formal language education in:
Chinese (Freie Universität Berlin, Germany)
Spanish and Russian. (Princeton University)
Latin and French. (High School, Germany)