UNIVERSITY OF TORONTO, DEPARTMENT OF COMPUTER SCIENCE

6 King's College Rd. LP283   TEL: 416.978.7391   www.cs.toronto.edu/˜roweis/
Toronto, M5S 3G4 CANADA   FAX: 416.978.1455   roweis@cs.toronto.edu

SAM T. ROWEIS

CURRICULUM VITAE

Date of Birth: April 27, 1972.   Citizenship: Dual Canadian/USA

ACADEMIC APPOINTMENTS & DEGREES

- **Associate Professor**, University of Toronto (July 2006–present)
  Assistant Professor, University of Toronto (July 2001–July 2006)
  Department of Computer Science
- **Visiting Faculty**, Massachusetts Institute of Technology (Jan.–Sept. 2005)
  Computer Science & Artificial Intelligence Laboratory (CSAIL)
- **Bogue Research Fellow**, on leave from University College London (April – June 2001)
  Massachusetts Institute of Technology, BCS (affiliation: Seung Lab)
- **Senior Research Fellow**, University College London (April 1999 – April 2001)
  Gatsby Computational Neuroscience Unit (director: Geoffrey Hinton)
- **Doctor of Philosophy**, California Institute of Technology (Sept. 1994 – Jan. 1999)
  Computation and Neural Systems Option (advisor: John Hopfield)
- **Bachelor of Applied Science**, University of Toronto (Sept. 1990 – May 1994)
  Engineering Science Program, Honours Degree

INDUSTRIAL & RESEARCH EXPERIENCE

- **Google Inc.**, Senior Research Scientist & Consultant (2007 – present)
- **Adapt Technologies**, Technical Advisory Board (Jan. 2005–Sept.2006)
- **WhizBang! Labs**, Technical Advisory Board & Visiting Researcher (June 2001–May 2002)
- **Bell Laboratories**, Lucent Technologies – Resident Visitor (Consultant) (May 1997 – Sept. 1998)
- **Microsoft Corporation** – Software Design Engineer (May–Sept. 1992)
- **Northern Telecom Canada** (now Nortel) – Programmer (June–Sept. 1989)
- **Institute for Biomedical Engineering**, U. of Toronto – Research Assistant (May–Sept. 1993)

TEACHING EXPERIENCE

- **Assistant/Associate Professor**, **University of Toronto**, Department of Computer Science
  CSC2515 (Machine Learning) (Fall 2006/05/04/03/02)
  CSC412 (Uncertainty and Learning in Artificial Intelligence) (Spring 2006/04/03/02)
  CSC310 (Information Theory) (Fall 2006/05/04)
  ECE242 (Algorithms and Data Structures) (Fall 2003)
  CSC2506 (Probabilistic Reasoning) (Spring 2006/04)
- **Instructor**, **University College London**, Gatsby Unit
  GCNU Unsupervised Learning (graduate) (Fall 2000)
- **Teaching Assistant**, **California Institute of Technology**, Computation and Neural Systems
  CNS156 (Learning Theory), CNS185 (Collective Computation) (Winter 1995 & Winter 1996)
- **Teaching Assistant**, **University of Toronto**, Faculty of Applied Science and Engineering
  AER201S (Aerospace Project Design Lab) (Spring 1994)

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GRANTS & FELLOWSHIPS ....

- Canada Research Chair (CRC) in Statistical Machine Learning   (UofT, 2004-2009; renewed-2014)
- NSERC Individual Discovery Research Award   (UofT, 2002-2006; 2007-2011)
- NSERC Accelerator Supplement   (UofT, 2007-2011)
- Sloan Research Fellowship in Science & Technology   (UofT, 2005-2007)
- Canadian Institute for Advanced Research (CIAR), NCAP Program   (Scholar, 2006-2009)
- Canada Foundation for Innovation (CFI),   (with R. Zemel, UofT, 2002-2007)
- Premier's Research Excellence Award (PREA), Ontario   (UofT, 2002-2007)
- Institute for Robotics and Intelligent Systems (IRIS-LEARN)   (co-PI, UofT, 2002-2005)
- NSF ITR-ASE (Automated Astrometry)   (NYU external-collaborator 2004)
- Connaught New Staff Matching Grant   (UofT, 2002)
- Connaught Startup Grant   (UofT, 2001)
- Bogue Research Fellowship, Massachusetts Institute of Technology   (UCL, Nov. 2000)
- Canada-UK Millennium Fellowship, Royal Society/NSERC   (GCNU, Feb. 2000)
- NSERC Postdoctoral Fellowship   (GCNU, Jan. 2000)
- NSF International Postdoctoral Fellowship   (GCNU, April 1999)
- NSF NATO Postdoctoral Fellowship   (declined April 1999)
- NSERC 1967 Science Canada Award   (May 1994, renewed May 1996)
- NSF Graduate Fellowship   (declined March 1994)

HONOURS, AWARDS & SCHOLARSHIPS ....

- Scholar: Canadian Institute for Advanced Research (NCAP Program)   (Canada, 2006)
- Alfred P. Sloan Foundation Research Fellow   (USA, 2005)
- Canada Research Chair (CRC) in Statistical Machine Learning   (Canada, 2004)
- Premier's Research Excellence Award (PREA)   (Ontario, 2002)
- Computer Science Students Union (CSSU) Teaching Award   (University of Toronto 2005/6)
- Distinguished Graduate Student Lecture   (California Institute of Technology 1998)
- Graduate Student Teaching Award   (California Institute of Technology 1997)
- Appointed to Senior Member, IEEE   (2006)
- Elected to Member, Acoustical Society of America   (USA, 2000)
- Rank Prize, Most Outstanding Short Paper, Mini-Symposium on Learning   (UK, 2000)
- Rhodes Scholarship Finalist   (Ontario, 1993)
- NSERC Undergraduate Research Award   (University of Toronto 1993)
- Canada Scholarship   (University of Toronto 1990–94)
- J.W.Billes Admission Scholarship   (University of Toronto 1990–94)
- Ontario Scholarship   (University of Toronto 1990)
- National Book Award   (University of Toronto 1990)
- Valedictorian   (University of Toronto Schools 1990)

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CURRICULUM VITAE

INVITED TUTORIALS, & SHORT COURSES ....

- Machine Learning Summer School, 2006, Taiwan (invited short course)   (July 2006)
- Machine Learning Summer School, 2005, ANU Canberra (invited short course)   (Jan. 2005)
- UW-Seattle CSE (invited lecture in Course on Vision Algorithms)   (May 2004)
- Scandinavian Conference on Image Analysis (SCIA03), Sweden (invited tutorial)   (July 2003)
- *Advances in Neural Information Processing Systems 12*, Denver (invited tutorial)   (Dec. 1999)
- *Neural Computation Tutorial*, Gatsby Unit, UCL. (invited tutorial)   (Sept. 1999)

PROFESSIONAL ACTIVITIES ....

- **Conference Executive Committees**:
  ICML 2008 co-**Program Chair** (w/Andrew McCallum, U.Mass), NIPS 2007 Publications Chair, NIPS 2004 Volunteers Chair; NIPS 2003 Tutorials Chair

- **Conference Senior Program Committees**:
  ICML 2006 & 2004 Senior Program Committee; UAI 2005 Senior Program Committee; NIPS 2001 & 2002 area chair

- **Editorial Boards**: Journal of Machine Learning Research (JMLR) – Action Editor
  Annals of Applied Statistics (AOAS) – Founding Action Editor

- **Workshops Organized**:
  Mathematics of Knowledge and Search Engines, IPAM, UCLA (October 22-26, 2007)
  Neural Computation and Adaptive Perception, CIAR, Montreal, Canada (April 25-26, 2005)
  IRIS Machine Learning Workshop (with Yoshua Bengio), Ottawa, Canada (June 9, 2004)
  NIPS 2002 Workshop on Spectral Methods, Whistler, Canada. (Dec. 2002, with Josh Tenenbaum)

- **Grant Reviews**: NSERC (Canada), CRC (Canada), NSF (USA), EPSRC (UK), BSF (Israel-USA)

- **Journal Reviewing**:
  Nature, PNAS, Journal of Machine Learning Research, Machine Learning Journal, Neural Computation, Journal of Artificial Intelligence Research, Computer Speech and Language, IEEE Trans. Speech & Audio Processing, IEEE Trans. PAMI, IEEE Trans. Neural Networks, Neurocomputing

- **Major Conference Reviewing**:
  NIPS, AI-STATS, ICML, UAI, CVPR, SIGGRAPH, IJCAI, AI-MATH

- **Book Reviews**: SIAM

- **Society Memberships**:
  Institute of Electrical and Electronic Engineers (IEEE) Senior Member, Acoustical Society of America (ASA) Member Grade, Association for Computing Machinery (ACM)

- **Google Faculty Summit**:
  July 2007 & July 2006, Mountain View, CA (Google Inc.)

INVITED SEMINARS & WORKSHOP PRESENTATIONS ....

- UC Berkeley, Center for Intelligent Systems (invited seminar)   (February 2009)
- Caltech, Computation and Neural Systems (invited seminar)   (January 2009)
- MIT Computer Science and AI Laboratory (invited seminar)   (December 2008)
- University of Edinburgh, Dept. Informatics (invited seminar)   (June 2008)
- Gatsby Computational Neuroscience Unit (invited seminar)   (May 2008)
- Isaac Newton Institute for Mathematical Sciences (invited workshop participant)   (April 2008)
- Courant Institute, New York University (invited seminar)   (April 2008)
- Machine Learning for Web Search Workshop, NIPS 2007 (invited talk)   (December 2007)
- CIFAR "Next Big Question" Series (Edmonton)   (November 2007)
- University of Alberta, Computing Sciences (invited seminar)   (November 2007)
- Microsoft Research/Live Labs, Redmond/Seattle (invited seminar)   (November 2007)
- Institute for Pure and Applied Mathematics, UCLA (invited workshop presentation)   (October 2007)
- Data Mining in Aeronautics, Science & Exploration – NASA (invited talk)   (June 2007)
- Toyota Technical Institute, Chicago (invited seminar)   (June 2007)
- UC Irvine, Information and Computer Science (Distinguished Speaker Series)   (March 2007)
- Banff Centre, Math. Prog. Data Mining & ML (invited BIRS workshop talk)   (January 2007)
- Google Labs, Pittsburgh (invited seminar)   (September 2006)
- CIAR Summer School, 2006, Toronto   (August 2006)
- Statistical Society of Canada (invited presentation)   (May2006)
- University at Buffalo, Dept. Computer Science (invited colloquium)   (April 2006)
- Fast Manifold Learning Workshop, College of William & Mary (invited workshop talk)   (April 2006)
- Yahoo Labs Research, Santa Clara (invited seminar)   (February 2006)
- Brown University, Dept. Computer Science (invited seminar)   (February 2006)
- Information Theory & Applications Center, San Deigo (invited talk)   (February 2006)
- Waterloo University, Dept. Statistics (invited seminar)   (February 2006)
- Carnegie Mellon University, Pittsburgh (invited colloquium)   (January 2006)
- Fields Institute for Rsrch in Math. Sciences, Toronto (invited workshop talk)   (November 2005)
- University of Pennsylvania CIS, Philadelphia (invited seminar)   (August 2005)
- Dept. Informatics, University of Edinburgh, UK (invited seminar)   (June 2005)
- Inference Group, Cavendish Labs, Cambridge UK (invited seminar)   (June 2005)
- Gatsby Computational Neuroscience Unit, UCL, UK (invited seminar)   (May 2005)
- CIAR NCAP Workshop on Manifold Learning, Montreal (co-organizer)   (April 2005)
- Toyota Technological Institute Chicago (invited seminar)   (April 2005)
- Learning, Language, Vision & Graphics Colloquium, MIT CSAIL (invited seminar)   (March 2005)
- Spoken Language Systems Group, MIT CSAIL (invited seminar)   (March 2005)
- Hearing Research Center, Boston University (invited seminar)   (March 2005)
- Dept. Computer Science, University of Massachusetts, Amherst (invited seminar)   (Feb. 2005)
- Stochastic Systems Group, MIT LIDS (invited seminar)   (Feb. 2005)

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INVITED SEMINARS & WORKSHOP PRESENTATIONS (CONTINUED) ....

- Australian Centre for Field Robotics, U. Sydney (invited seminar) (Jan. 2005)
- MSRI Berkeley, Workshop on High Dimensional Data (invited seminar) (Dec. 2004)
- California Institute of Technology (invited seminar) (Nov. 2004)
- AI-Medicine Retreat, Toronto (invited speaker) (Oct. 2004)
- Dept. Statistics, University of Toronto (invited seminar) (Oct. 2004)
- Dept. Statistics, University of Chicago (invited seminar) (Oct. 2004)
- Proteomtic & Bioinformatics Retreat, Toronto (invited speaker) (Sept. 2004)
- Hanse Institute for Advanced Study, Delmenhorst, Germany (invited speaker) (Aug. 2004)
- Google Labs, NYC (invited seminar) (July 2004)
- IRIS Machine Learning Workshop, Ottawa (co-organizer) (June 2004)
- Microsoft Research Seattle (invited seminar) (May 2004)
- Dept. Computer Science, University of Massachusetts, Amherst (invited seminar) (April 2004)
- Center for Language and Speech Processing, Johns Hopkins (invited seminar) (March 2004)
- *MITACS Workshop on Data Mining*, Montreal (invited speaker) (Nov.2003)
- *Multi-Agent Control Summer School*, Hamilton Institute, NUI Maynooth (invited speaker) (Sept.2003)
- Eurospeech 2003 Conference, Geneva (invited speaker) (Sept.2003)
- *MITACS CRM Workshop on Advances in Machine Learning*, Montreal (invited speaker) (June 2003)
- *Workshop on Intelligent Hearing Instruments*, Niagara (invited speaker) (Oct. 2001)
- *Banbury Center*, Cold Spring Harbor (invited speaker) (Sept. 2000)
- *HearNet EPSRC Meeting*, Sussex UK (invited speaker) (June 2000)
- *Rank Prize Mini-Symposium* Grasmere, UK (invited speaker, best presentation award) (April 2000)
- *Learning Workshops*, Snowbird Utah (Spring 2000-2006)
- *Kernel Day*, Microsoft Research Cambridge (invited talk) (Jan. 2000)
- *Distinguished Graduate Student Lecture*, California Institute of Technology. (May 1998)
- *Neural Information and Coding Workshop*, Snowbird Utah (March 1997)
- *Speech Recognition Workshop WS96*, Johns Hopkins University CLSP (Summer 1996)
- *DIMACS2 DNA Computing Workshop*, Princeton (invited talk) (June 1996)

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CURRICULUM VITAE

SELECTED SCIENTIFIC PUBLICATIONS ....

- Jonathan T. Barron, David W. Hogg, Dustin Lang, Sam Roweis   **Refereed Journals**
  Blind Date: Using Proper Motions to Determine the Ages of Historical Images
  The Astronomical Journal, v136, pp.1490–1501 (2008)

- Jonathan Barron, Christopher Stumm, David Hogg, Dustin Lang, Sam Roweis
  Cleaning the USNO-B Catalog Through Automatic Detection of Optical Artifacts
  The Astronomical Journal (AJ), v135, pp.414–422 (2008)

- Padmanabhan et. al.
  An Improved Photometric Calibration of the Sloan Digital Sky Survey Imaging Data
  The Astrophysical Journal (ApJ) v674(2), pp.1217–1233 (2008)

- Michael Blanton & Sam Roweis
  K-Corrections and Filter Transformations in the Ultraviolet, Optical, and Near Infrared
  The Astronomical Journal (AJ), v133, pp.734–754 (2007)

- Jennifer Listgarten, Radford Neal, Sam Roweis, Peter Wong & Andrew Emili
  Difference Detection in LC-MS Data for Protein Biomarker Discovery
  Bioinformatics, v23, pp. e198–e204 (2007). [also appeared in Proceedings of 5th European Conference on Computational Biology (ECCB'06). Best Student Paper, 3rd prize.]

- R. Fergus, B. Singh, A. Hertzmann, S. Roweis, W. Freeman
  Removing Camera Shake from a Single Photograph.
  ACM Transactions on Graphics, v25(3), pp.787–794 (2006).
  [Proceedings of ACM SIGGRAPH 2006, Boston.]

- D.W.Hogg, M.R.Blanton, S.T.Roweis & K..V.Johnston
  Modeling Complete Distributions with Incomplete Observations:
  The Velocity Ellipsoid from Hipparcos Data
  The Astrophysical Journal, v.269(1), pp.268–275 (2005).

- Peng et. al.
  A Panoramic View of Noncoding RNA Processing.
  Cell. 113 pp.919–933 (2003)

- Lawrence Saul & Sam Roweis.
  Think Globally, Fit Locally: Unsupervised Learning of Nonlinear Manifolds.
  Journal of Machine Learning Research, v4, pp.119–155 (2003)

- Sam Roweis & Lawrence Saul.
  Nonlinear dimensionality reduction by locally linear embedding.
  Science. 290(5500) pp.2323–2326 (2000).

- Sam Roweis & Zoubin Ghahramani.
  A Unifying Review of Linear Gaussian Models.
  Neural Computation 11(2), pp.305–345 (1999)

- Sam Roweis & Erik Winfree.
  On the Reduction of Errors in DNA computation.
  Journal of Computational Biology 6(1), pp.65–75 (1999)

- Len Adleman, Paul Rothemund, Sam Roweis, Erik Winfree.
  On Applying Molecular Computation to the Data Encryption Standard.
  Journal of Computational Biology 6(1), pp.53–63 (1999)

- S.Roweis, E.Winfree, R.Burgoyne, N.Chelyapov, M.Goodman, P.Rothemund, L.Adleman.
  A Sticker Based Model for DNA Computation.
  Journal of Computational Biology 5(4), pp.615–629 (1998)

SELECTED SCIENTIFIC PUBLICATIONS (CONTINUED) ....

- Edward Meeds, David Ross, Richard Zemel & Sam Roweis   **Refereed Conferences**
  Learning Stick-figure Models using Nonparametric Bayesian Priors over Trees
  Computer Vision and Pattern Recognition (CVPR'08)

- Choon Hui Teo, Amir Globerson, Sam Roweis & Alex Smola
  Convex Learning with Invariances.
  Neural Information Processing Systems 20 (NIPS'07)

- Benjamin Marlin, Richard Zemel, Sam Roweis and Malcolm Slaney
  Collaborative Filtering and the Missing at Random Assumption
  Uncertainty in Artificial Intelligence 23 (UAI'07)

- Amir Globerson and Sam Roweis *Visualizing Pairwise Similarity via Semidefinite Programming.*
  12th International Workshop on Artificial Intelligence and Statistics (AI-STATS'07).

- Graham Taylor, Geoff Hinton & Sam Roweis
  Modeling Human Motion Using Binary Latent Variables.
  Neural Information Processing Systems 19 (NIPS'06), pp.1345–1352

- Jennifer Listgarten, Radford Neal, Sam Roweis, Rachel Puckrin & Sean Cutler
  Bayesian detection of infrequent differences in sets of time series with shared structure.
  (Best Student Paper, Honorable Mention)
  Neural Information Processing Systems 19 (NIPS'06), pp.905–912

- Edward Meeds, Zoubin Ghahramani, Radford Neal & Sam Roweis
  Modeling Dyadic Data with Binary Latent Factors.
  Neural Information Processing Systems 19 (NIPS'06), pp.977–984

- Nathan Srebro, Gregory Shakhnarovich & Sam Roweis.
  An Investigation of Computational and Informational Limits in Gaussian Mixture Clustering.
  International Conference on Machine Learning 23 (ICML'06), pp.865–872

- Amir Globerson & Sam Roweis.
  Robust Learning by Feature Deletion.
  International Conference on Machine Learning 23 (ICML'06), pp.353–360

- Amir Globerson & Sam Roweis.
  Metric Learning by Collapsing Classes.
  Neural Information Processing Systems 18 (NIPS'05), pp.451–458

- Sam Roweis.
  Nonlinear Blind Sensor Fusion and Identification
  Proceedings of the 2005 International Conference on Information Fusion (Fusion'05)

- Kevin Laven, Sam Roweis & Scott Leishman.
  A Statistical Learning Approach to Document Image Analysis.
  Proceedings of the 2005 International Conference on Document Analysis and Recognition (ICDAR'05)

- Keir Mierle, Kevin Laven, Sam Roweis & Greg Wilson.
  Mining Student CVS Repositories for Performance Indicators.
  Proceedings 2005 International Workshop on Mining Software Repositories (MSR'05), pp.41–45

- Kannan Achan, Sam Roweis, Aaron Hertzmann & Brendan Frey.
  A Segment-Based Probabilistic Generative Model of Speech.
  International Conference on Acoustics, Speech & Signal Processing (ICASSP 2005), pp.221–224

- Ben Marlin, Sam Roweis & Rich Zemel.
  Unsupervised Learning with Non-Ignorable Missing Data.
  10th International Workshop on Artificial Intelligence & Statistics (AI-STATS 2005)

SELECTED SCIENTIFIC PUBLICATIONS (CONTINUED) ....

- Jennifer Listgarten, Radford Neal, Sam Roweis & Andrew Emili.   **Refereed Conferences**
  Multiple Alignment of Continuous Time Series.
  Neural Information Processing Systems 17 (NIPS'04), pp.817–824

- Jacob Goldberger, Sam Roweis, Geoff Hinton & Ruslan Salakhutdinov.
  Neighbourhood Component Analysis.
  Neural Information Processing Systems 17 (NIPS'04), pp.513–520

- Jacob Goldberger & Sam Roweis.
  Heirarchical Clustering of a Mixture Model.
  Neural Information Processing Systems 17 (NIPS'04), pp.505–512

- Sam Roweis.
  Factorial Models and Refiltering for Speech Separation & Denoising.
  Proceedings of Eurospeech 2003 (Geneva), pp.1009–1012.

- Radford Neal & Matthew Beal & Sam Roweis.
  Inferring State Sequences for Non-linear Systems with Embedded Hidden Markov Models.
  Neural Information Processing Systems 16 (NIPS'03), pp.401–408

- Jakob Verbeek & Sam Roweis & Nikos Vlassis.
  Non-linear CCA and PCA by Alignment of Local Models. (oral)
  Neural Information Processing Systems 16 (NIPS'03), pp.297–304

- Kannan Achan & Sam Roweis & Brendan Frey.
  Probabilistic Inference of Speech Signals from Phaseless Spectrograms.
  Neural Information Processing Systems 16 (NIPS'03), pp.1393–1400

- Ruslan Salakhutdinov & Sam Roweis & Zoubin Ghahramani.
  On the Convergence of Bound Optimization Algorithms.
  Uncertainty in Artificial Intelligence 19 (UAI'03), pp.509–516

- Ruslan Salakhutdinov & Sam Roweis.
  Adaptive Overrelaxed Bound Optimization Methods.
  International Conference on Machine Learning 20 (ICML'03), pp.664–671

- Ruslan Salakhutdinov & Sam Roweis & Zoubin Ghahramani.
  Optimization with EM and Expectation-Conjugate-Gradient.
  International Conference on Machine Learning 20 (ICML'03), pp.672–679

- Geoffrey Hinton & Sam Roweis.
  Stochastic Neighbour Embedding.
  Neural Information Processing Systems 15 (NIPS'02), pp.833–840.

- Yee Whye Teh & Sam Roweis.
  Automatic Alignment of Hidden Representations.
  Neural Information Processing Systems 15 (NIPS'02), pp.841–848.

- Sham Kakade, Yee Whye Teh & Sam Roweis.
  An Alternate Objective Function for Markovian Fields.
  International Conference on Machine Learning 19 (ICML'02), pp.275–282.

- Sam Roweis & Lawrence Saul & Geoffrey Hinton.
  Global Coordination of Local Linear Models. (oral)
  Neural Information Processing Systems 14 (NIPS'01), pp.889–896.

- Sam Roweis.
  One Microphone Source Separation. (oral)
  Neural Information Processing Systems 13 (NIPS'00), pp.793–799.

SELECTED SCIENTIFIC PUBLICATIONS (CONTINUED) ....

- Sam Roweis.   **Refereed Conferences**
  Constrained Hidden Markov Models.
  Neural Information Processing Systems 12 (NIPS'99), pp.782–788.

- Zoubin Ghahramani & Sam Roweis.
  Learning nonlinear dynamical systems using an EM algorithm.
  Neural Information Processing Systems 11 (NIPS'98), pp.431–437

- Sam Roweis.
  EM Algorithms for PCA and SPCA.
  Neural Information Processing Systems 10 (NIPS'97), pp.626–632

- John Hopfield, Carlos Brody & Sam Roweis.
  Computing with Action Potentials.
  Neural Information Processing Systems 10 (NIPS'97), pp.166–172

- Sam Roweis & Abeer Alwan.
  Towards Articulatory Speech Recognition.
  Proceedings of Eurospeech 1997 (Rhodes) v.3, pp.1227–1230

- M. Ostendorf, W. Byrne, M. Bacchiani, M. Finke, A. Gunawardana, K. Ross,
  S. Roweis, E. Shriberg, D. Talkin, A. Waibel, B. Wheatley, & T. Zeppenfeld.
  Modeling systematic variations in pronunciation via a language-dependent hidden speaking mode.
  Proc. International Conference on Spoken Language Processing (ICSLP) 1996, Philadelphia.

- Len Adleman, Paul Rothemund, Sam Roweis, Erik Winfree.
  On Applying Molecular Computation to the Data Encryption Standard.
  Proceedings of 2nd Annual DIMACS Workshop on DNA Based Computers, 1996.

- S.Roweis, E.Winfree, R.Burgoyne, N.Chelyapov, M.Goodman, P.Rothemund, L.Adleman.
  A Sticker Based Model for DNA Computation.
  Proceedings of 2nd Annual DIMACS Workshop on DNA Based Computers, 1996.

- Sam Roweis & Ruslan Salakhutdinov.   **Book Chapters**
  An Adversarial View of Covariate Shift and A Minimax Approach in Joaquin Quinonero Candela,
  Masashi Sugiyama, Anton Schwaighofer, Neil D. Lawrence eds. em Dataset Shift, Adaptive Com-
  putation and Machine Learning Series, (MIT Press, 2008) *Simultaneous Localization and Surveying
  with Multiple Agents*
  in R. Murray-Smith & R. Shorten eds. *Switching and Learning in Feedback Systems*, pp.313–332,
  Proc. Maynooth Multi-Agent Control 2003 Summer School, Springer LNCS v.3355, 2005.

- Sam Roweis.
  Automatic Speech Processing by Inference in Generative Models, pp.97–134
  in Pierre Divenyi, ed. *Speech Separation by Humans and Machines* (Springer, 2005).

- Sam Roweis & Zoubin Ghahramani.
  Learning Nonlinear Dynamical Systems Using the EM Algorithm.
  in Simon Haykin, ed. *Kalman Filtering and Neural Networks* (Wiley, 2001). pp.175–220

SELECTED SCIENTIFIC PUBLICATIONS (CONTINUED) ....

Technical Reports

- Edward Meeds and Sam Roweis
  Nonparametric Bayesian Biclustering
  Technical Report UTML-TR-2007-001, University of Toronto, June 2007.

- Nathan Srebro and Sam Roweis
  Time Dependent Dirichlet Processes
  Technical Report UTML-TR-2005-003, University of Toronto, March 2005.

- Kannan Achan, Sam Roweis, Brendan Frey
  A Segmental HMM for Speech Waveforms.
  Technical Report UTML-TR-2004-001, University of Toronto, January 2004.

- Keir Mierle, Sam Roweis & Greg Wilson.
  CVS Data Extraction and Analysis.
  Technical Report UTML-TR-2004-002, University of Toronto, August 2004.

- Sam Roweis & Carlos Brody. *Linear Heteroencoders.*
  GCNU TR1999-002, available from http://www.gatsby.ucl.ac.uk

- Sam Roweis. *Constrained Hidden Markov Models and Applications.*
  GCNU TR1999-003, available from http://www.gatsby.ucl.ac.uk

- Sam Roweis. *EM Algorithms for PCA and Sensible PCA.*
  CNS TR-97-02, available from http://www.cns.caltech.edu

- Sam Roweis & Zoubin Ghahramani.
  An EM Algorithm for Identification of Nonlinear Dynamical Systems. unpublished.