

DOMINIC STANDAGE, Curriculum Vitae

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DOB 1968.11.07
Citizenship Canadian / British

RESEARCH SUMMARY

My research addresses the neural mechanisms underlying cortical and hippocampal function. I use spiking-neuron and population-rate network models to simulate experiments on decision making, executive control and memory. My current research addresses the cortical representation of elapsed time and the modulation of other cortical and subcortical circuitry by this temporal coding. I work closely with experimentalists in Physiology and Psychology.

EDUCATION

DALHOUSIE UNIVERSITY, HALIFAX CANADA
Doctor of Philosophy, Computer Science, September 2003 – August 2007
Thesis title Mechanisms of short term and long term memory in cortex: neural fields and synaptic plasticity

UNIVERSITY OF WESTMINSTER, LONDON UK
Master of Science, Artificial Intelligence, October 1997- January 2001
Graduated with Distinction
Thesis title An electronic nose: a hybrid neural network architecture to classify bacteria from gas sensor data

DALHOUSIE UNIVERSITY, HALIFAX CANADA
Bachelor of Arts, Psychology, 1988-1991

BOOTH MEMORIAL HIGH SCHOOL, ST. JOHN'S CANADA
Graduated, 1983-1986

EMPLOYMENT HISTORY

QUEEN'S UNIVERSITY, CENTRE FOR NEUROSCIENCE STUDIES, KINGSTON CANADA
Postdoctoral research fellow, Canadian Institutes of Health Research Group in Sensory-Motor Processing / Department of Physiology, November 2007 – present
Computational modelling of neural systems

DALHOUSIE UNIVERSITY, FACULTY OF COMPUTER SCIENCE, HALIFAX CANADA
Postdoctoral research fellow, Computational Neuroscience Group, September 2007 – November 2007
Research Assistant, Computational Neuroscience Group, September 2003 – August 2007
Teaching Assistant, September 2003 – August 2007

THOMSON SCIENTIFIC, LONDON UK
Business Systems Developer, March 2002 – August 2003
Technical specification and development of internal business systems, including global intranet applications and language translation systems

BLOOMS OF BRESSINGHAM LTD, BERKSHIRE UK
Senior Developer / Webmaster, May 2000 – March 2002
Specification, development and administration of all technical facets of online business, transactional processing and financial reporting. Management of contract developers and designers

REVOLUTION LTD, LONDON UK
Senior Programmer, September 1997 - May 2000
Software applications specification and development, management of in-house and contract developers, and client liaison

FREELANCE, LONDON UK

Software developer, September 1995 - September 1997

Software development for clients including the British School of Motoring, IPC Magazines, Inland Revenue UK, and Sony

PUBLICATIONS

BOOK CHAPTERS

Dominic Standage and Thomas Trappenberg, Cognitive Neuroscience, *The Cambridge Handbook of Cognitive Science*, Keith Frankish and William Ramsey (eds.), Cambridge University Press, *in press*

REFEREED JOURNAL PUBLICATIONS

Dominic Standage and Martin Paré, Persistent storage capability impairs decision making in a biophysical network model, *Neural Networks*, *in press*, available online 19 May 2011, ISSN 0893-6080, DOI: 10.1016/j.neunet.2011.05.004 (<http://www.sciencedirect.com/science/article/pii/S0893608011001468>)

Dominic Standage, Hongzhi You, DaHui Wang and Michael C. Dorris, Gain modulation by an urgency signal controls the speed-accuracy trade-off in a network model of a cortical decision circuit, *Frontiers in Computational Neuroscience*, 5:7, doi: 10.3389/fncom.2011.00007, 2011

Dominic Standage, Sajiya Jalil and Thomas Trappenberg, Computational consequences of experimentally derived spike-time and weight dependent plasticity rules, *Biological Cybernetics*, 96:615-623, 2007

Dominic I. Standage, Thomas P. Trappenberg and Raymond M. Klein, Modelling divided visual attention with a winner-take-all network, *Neural Networks*, 18, 5-6:620-627, 2005

Thomas P. Trappenberg and Dominic I. Standage, Multi-packet regions in stabilized continuous attractor networks, *Neurocomputing*, 65-66:617-622, 2005

MANUSCRIPTS IN PREPARATION

Dominic Standage and Michael C. Dorris, Trading speed and accuracy by coding time: a coupled-circuit cortical model, *in preparation*

David M. Milstein, Dominic Standage and Michael C. Dorris, Motor planning processes are influenced by the value and timing of potential actions, *in preparation*

Dominic Standage, Thomas Trappenberg and Stefan Krueger, The dependence of LTP on post-synaptic bursting and the theta rhythm is explained by calcium flux in a dynamic model of CA3-CA1 plasticity, *in preparation*

Hongzhi You, Dominic Standage, Da-Hui Wang and KongFatt Wong-Lin, Flexible control of decision making: time-dependent excitatory and inhibitory gain modulation in a cortical field model, *in preparation*

REFEREED INTERNATIONAL CONFERENCE PROCEEDINGS

Dominic Standage and Thomas Trappenberg, The trouble with weight-dependent STDP, *Proceedings of the International Joint Conference on Neural Networks 2007*, 1359 - 1364

Dominic I. Standage, Thomas P. Trappenberg and Raymond M. Klein, A continuous attractor neural network model of divided visual attention, *Proceedings of the International Joint Conference on Neural Networks 2005*, 2897-2902

Dominic I. Standage and Thomas P. Trappenberg, Differences in the sub-threshold dynamics of leaky integrate-and-fire and Hodgkin-Huxley neuron models, *Proceedings of the International Joint Conference on Neural Networks 2005*, 396-399

NATIONAL AND INTERNATIONAL CONFERENCE ABSTRACTS

Dominic Standage and Michael C. Dorris, A local-circuit cortical model supports timing in the hundreds of milliseconds range, *Society for Neuroscience Meeting, SfN 2010, November 13 – 17, San Diego, USA*

Dominic Standage and Martin Paré, A temporal signal provides flexible control of the speed and accuracy of decisions by gain modulation of circuit dynamics in a neural model of LIP, *Society for Neuroscience Meeting, SfN 2009, Chicago, USA*

Dominic Standage and Martin Paré, A canonical cortical model predicts persistent mnemonic activity in area LIP is afferently driven, *Canadian Physiological Society Meeting, CPS 2009, Mont St. Anne, Canada*

Dominic Standage and Martin Paré, A network of spiking neurons makes slower, more accurate decisions under parameters that do not support working memory, *Society for Neuroscience Meeting, Sfn 2008, Washington, DC, USA*

Dominic Standage and Martin Paré, A network of spiking neurons predicts eye movement decisions in a visual discrimination task under impaired NMDA function, *Canadian Association for Neuroscience Meeting, Montreal, Canada*

Dominic Standage and Thomas Trappenberg, An efficient Ca^{2+} based plasticity rule with combined Ca^{2+} sources, *Proceedings of the Computational Neuroscience Meeting CNS*2007, Toronto, Canada*

Dominic Standage and Thomas Trappenberg, Probabilistic, weight-dependent STDP leads to rate-dependent synaptic fixed points, *Proceedings of the Computational Neuroscience Meeting CNS*2006, Baltimore, USA*

Dominic Standage, Sajiya Jalil and Thomas Trappenberg, A weight-dependent STDP rule leading to rate-dependent synaptic fixed points, *Proceedings of the International Conference of Cognitive and Neural Systems, 2006, Boston, USA*

Thomas Trappenberg, Dominic Standage, Sajiya Jalil and Alan Fine, A new interpretation of spike-time dependent plasticity data and their computational consequences, *The International Symposium of the Groupe de recherche sur le système nerveux central et le Centre de recherche en sciences neurologiques, Université de Montreal, 2006*

Dominic I. Standage, Thomas P. Trappenberg and Raymond M. Klein, A topographic saliency map that accounts for divided visual attention, *Proceedings of the International Conference on Cognitive and Neural Systems, Boston, USA, 2005*

PROFESSIONAL ACTIVITIES

INVITED TALKS AND PRESENTATIONS

Decisions in space and time: a neural model of the speed-accuracy trade-off, *Queen's University, Department of Physiology Invited Speaker Series, March 8, 2010*

Gain modulation by the encoding of urgency controls the speed-accuracy trade-off in a network model of LIP, *Annual Retreat of the Canadian Action and Perception Network, Ingersol Canada, October 1 – 2, 2009*

Gain modulation by a signal encoding elapsed time controls the speed-accuracy trade-off in a network model of a decision circuit in LIP, *Queen's Centre for Neuroscience Studies, Neuroscience Research Day, September 24, 2009*

Working memory capability impairs decision making in a biophysical network model, *University of Montreal, Mathematical Neuroscience Group, March 24, 2009*

Neural field models of cortical microcircuits: neurons, neural populations and parametric issues, *Queen's Centre for Neuroscience Studies, Friday Fights, February 20, 2009*

TEACHING AND STUDENT SUPERVISION

Guest Lecturer, Queen's University, Centre for Neuroscience Studies, January 2010 - present
NSCI 850: Introduction to Modelling in Neuroscience (graduate)
LSCI 426/826: Current Concepts in Sensorymotor Neuroscience (undergraduate/graduate)

Co-supervisor, Queen's University, Centre for Neuroscience Studies, January – May, 2011
Physics 590: Honours Research Thesis (undergraduate)

Teaching Assistant, Dalhousie University, Faculty of Computer Science, September 2003 – December 2006
Curriculum development, lecturing, teaching tutorials, marking assignments

REVIEWING

Brain Research, Frontiers in Computational Neuroscience, Computational and Systems Neuroscience

COMMITTEE WORK

Postdoctoral representative, Strategic Research Committee, Queen's University, January 2011 - present
Postdoctoral representative, Executive Committee, Queen's Centre for Neuroscience Studies, January 2011 - present
Graduate student rep., Faculty Graduate Committee, Faculty of Comp. Sci., Dalhousie University, Jan. – December, 2006

ADACEMIC AWARDS

2003 – 2007 Faculty of Graduate Studies Scholarship, Dalhousie University
2007 Travel Award, 16th Annual Computational Neuroscience Meeting CNS*2007, Toronto, Canada
2005 Travel Award, 9th International Conference on Cognitive and Neural Systems, Boston, USA

VOLUNTEER WORK

CATARAQUI CLIPPERS SOCCER CLUB

Head Coach 2002 Girls, January 2010 – present; Member of Board of Directors, January 2011 - present

DALHOUSIE UNIVERSITY, FACULTY OF COMPUTER SCIENCE

Graduate student representative, Faculty Graduate Committee, September 2006 – June 2007

HALIFAX CITY SOCCER CLUB

Member of Board of Directors, December 2006 – November 2007

REFERENCES

Available on request