

Curriculum Vitae

BRUCE BOBIER

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Education

- 2011 Telluride Neuromorphic Cognition Engineering Workshop
- 2008 – Present Ph. D. Candidate in Systems Design Engineering (expected Aug 2011)
Diploma in Theoretical Neuroscience (advisor: Chris Eliasmith)
University of Waterloo, Waterloo, Ontario, Canada
Thesis: The Attentional Routing Circuit: A Neural Model of Attentional Modulation and Control of Functional Connectivity.
- 2010 University of Ottawa Summer School in Computational Neuroscience
- 2006 – 2008 Ph. D. Candidate in Computer Science (advisor: Michael Wirth)
University of Guelph, Guelph, Ontario, Canada
- 2002 – 2006 B.A. Honours in Computer Science
University of Guelph, Guelph, Ontario, Canada
Thesis: A Fast Algorithm to Generate Open Meandric Systems and Meanders.

Other research experience

- 2006 – 2008 Research Assistant for Dr. Michael Wirth, University of Guelph
Topic: Image processing and digital image restoration
- 2007 Research Assistant for Dr. Judi McCuaig, University of Guelph
Topic: Assessing the usability of databases
- 2005 Research Assistant for Dr. Joe Sawada, University of Guelph
Topic: Combinatoric algorithms
- 2004 Research Assistant for Angela Vuk, University of Guelph
Topic: Database design and development

Awards and scholarships

- 2010 University of Ottawa Computational Neuroscience Summer School Travel and Tuition Award
- 2008 – 2011 NSERC Postgraduate Scholarship-Doctoral
National level competition award, comparable to NIH NRSA
- 2008 – 2011 University of Waterloo Presidents Scholarship
Scholarship for graduate students receiving NSERC scholarships
- 2008 University of Guelph Graduate Award
Scholarship for graduate students receiving NSERC scholarships
- 2004 – 2006 Jay Majithia Scholarship (University of Guelph)
Undergraduate research award for students in Computer and Information Science

2005 – 2007 Canada Millennium Scholarship
National award for undergraduate students showing excellent academic achievement

Publications

Articles in progress

- 2011 1. Bobier B., Stewart T.C. and Eliasmith C. (2011) *The Attentional Routing Circuit: Exploring the role of dendritic nonlinearities in visual attention.*
2. Mallia A., Bobier B., Stewart T.C. and Eliasmith C. (2011) *Network implementation of single cell neuron models with nonlinear dendrites.*

Peer-reviewed journal articles

- 2009 3. Bobier B. and Sawada J. (2009) *A fast algorithm to generate open meandric sequences and meanders*, ACM Transactions on Algorithms, **6** no. 12, 1–12

Conference publications

- 2011 4. Bobier B., Stewart T.C. and Eliasmith, C. (2011) *The Attentional Routing Circuit: Receptive Field Modulation Through Nonlinear Dendritic Interactions*, Proceedings Cosyne 2011 (Salt Lake City, Utah)
- 2010 5. Bobier B., Stewart T.C. and Eliasmith, C. (2010) *Dynamic Routing Model for Visuospatial Attention*, Proceedings Cosyne 2010 (Salt Lake City, Utah)
- 2009 6. Wirth M. and Bobier B. (2009) *Registration of the Prokudin-Gorskii Colour Photographs Using a Multiresolution SSIM Algorithm*, Proceedings of the 6th International Conference on Image Analysis and Recognition (Halifax, Nova Scotia, Canada, July 6-8). ICIAR '09, 917-926
- 2008 7. Bobier B. and Wirth M. (2008) *Content-based image retrieval using hierarchical temporal memory*, in Proceeding of the 16th ACM international Conference on Multimedia (Vancouver, British Columbia, Canada, October 26 - 31, 2008). MM '08, 925-928.
- 2007 8. Wirth M. and Bobier B. (2007) *Suppression of Noise in Historical Photographs Using a Fuzzy Truncated-Median Filter*, Proceedings International Conference on Image Analysis and Recognition, Montreal, Quebec, Canada. 4: 1206-1216.

Invited Presentations

- 2011 Sept Salk Institute, La Jolla, CA: *Attentional modulation and the control of functional connectivity in visual cortex.*
- 2011 July Telluride Neuromorphic Cognition Engineering Workshop, Telluride, CO: *Neural modelling of attentional modulation and control.*
- 2010 May Robarts Research Institute, University of Western Ontario, London, Canada: *Dynamic routing of attended visual information in cortex through nonlinear dendritic interactions.*

Committees, Professional Affiliations and Other Activities

Teaching Assistant – CIS1500 (2008)
CISters (2007-2009)
Secretary – Royal City Computing Society (2007-2008)