

Eric Crawford

PHD CANDIDATE IN MACHINE LEARNING
McGill University, Montreal, Quebec, Canada

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Education

Candidate for PhD, Computer Science

MCGILL UNIVERSITY / MILA

- Cumulative GPA: 4.0/4.0
- Member of Reasoning and Learning Lab

Montreal, Quebec, Canada

2014-Present

Master of Mathematics, Computer Science

UNIVERSITY OF WATERLOO

- Cumulative GPA: 91.80%
- Member of Computational Neuroscience Research Group

Waterloo, Ontario, Canada

2012-2014

Bachelor of Mathematics, Honors Computer Science, Co-op, CogSci Option

UNIVERSITY OF WATERLOO

- Cumulative GPA: 88.07%
- Dean's Honors List with Distinction

Waterloo, Ontario, Canada

2007-2012

Publications

CONFERENCE / JOURNAL ARTICLES

- **Crawford, E.**, and Pineau, J. (2020). Exploiting Spatial Invariance for Scalable Unsupervised Object Tracking. *AAAI*.
- **Crawford, E.**, and Pineau, J. (2019). Spatially Invariant Unsupervised Object Detection with Convolutional Neural Networks. *AAAI*.
- Dong, Y, Shen, Y., **Crawford, E.**, van Hoof, H., and Cheung, J.C.K. (2018). BanditSum: Extractive Summarization as a Contextual Bandit. *EMNLP*.
- Kroger, B., **Crawford, E.**, Bekolay, T., and Eliasmith, C. (2016). Modeling interactions between speech production and perception: speech error detection at semantic and phonological levels and the inner speech loop. *Frontiers in Computational Neuroscience*.
- **Crawford, E.**, Gingerich, M., and Eliasmith, C. (2015). Biologically plausible, human-scale knowledge representation. *Cognitive science*.
- **Crawford, E.**, Gingerich, M., and Eliasmith, C. (2013). Biologically plausible, human-scale knowledge representation. *Conference of the Cognitive Science Society*.

WORKSHOPS AND PREPRINTS

- **Crawford, E.**, and Pineau, J. (2020). Learning 3D Object-Oriented World Models from Unlabeled Videos. *ICML Workshop on Object-Oriented Learning*. **Oral / Honorable Mention**.
- **Crawford, E.**, and Pineau, J. (2019). Spatially Invariant, Label-free Object Detection. *NeurIPS Workshop on Perception as Generative Reasoning*. **Spotlight**.
- Venkattaramanujam, S., **Crawford, E.**, Doan, T., and Precup, D. (2019). Self-supervised Learning of Distance Functions for Goal-Conditioned Reinforcement Learning. *arXiv preprint arXiv:1907.02998*.
- **Crawford, E.**, and Pineau, J. (2018). Spatially Invariant Attend, Infer, Repeat. *NeurIPS Workshop on Modeling the Physical World*.
- **Crawford, E.**, Rabusseau, G. and Pineau, J. (2017). Sequential Coordination of Deep Models for Learning Visual Arithmetic. *arXiv preprint arXiv:1809.04988*.
- Voelker, A., **Crawford, E.**, and Eliasmith, C. (2014). Learning large-scale heteroassociative memories in spiking neurons. *Unconventional Computation and Natural Computation*.

THESES

- **Crawford, E.** (2015). Biologically plausible, human-scale knowledge representation. Master of Mathematics Thesis, University of Waterloo.

SOFTWARE

- **Crawford, E.** (2013-2015). MPI backend for the Nengo neural simulator. <https://github.com/nengo/nengo-mpi>.
- **Crawford, E.** (2010-2015). Contributions to Nengo neural simulator core library. <https://github.com/nengo/nengo>.

Awards & Scholarships

Alexander Graham Bell Canada Graduate Scholarship - Doctoral - \$70,000 - NSERC	2016/09-2018/08
David R. Cheriton Graduate Scholarship - \$20,000 - University of Waterloo	2012/09-2014/08
Alexander Graham Bell Canada Graduate Scholarship - Masters - \$17,000 - NSERC	2012/09-2013/08
President's Graduate Scholarship - \$10,000 - University of Waterloo	2012/09-2013/08
Ontario Graduate Scholarship - \$15,000 (Declined) - Gov. of Ontario	2012/09-2013/08
Computational Neuroscience Summer Program - \$4,000 - University of Pennsylvania	2011/05-2011/07
Undergraduate Student Research Award - \$4,500 - NSERC	2011/01-2011/04
Undergraduate Student Research Award - \$4,500 - NSERC	2010/01-2010/04
Industrial Undergraduate Student Research Award - \$4,500 - NSERC	2008/09-2008/12
President's Scholarship - \$2,000 - University of Waterloo	2007/09-2007/12

Experience

Machine Learning Consultant PERSONA IDENTITIES INC. <ul style="list-style-type: none">• Designed and implemented machine learning solutions for document verification applications.	San Francisco, California, USA 2019
Teaching Assistant SCHOOL OF COMPUTER SCIENCE, MCGILL UNIVERSITY <ul style="list-style-type: none">• Implemented game-playing platform for AI course project, ran tournament between submitted agents.• Held office hours, marked papers, gave tutorials.	Montreal, Quebec, Canada 2014-2016
Teaching Assistant DEPARTMENT OF COMPUTER SCIENCE, UNIVERSITY OF WATERLOO <ul style="list-style-type: none">• Held office hours, marked papers, gave tutorials.	Waterloo, Ontario, Canada 2012-2014
Research Assistant DEPARTMENT OF OTORHINOLARYNGOLOGY, UNIVERSITY OF PENNSYLVANIA <ul style="list-style-type: none">• Implemented computational methods for identifying neural receptive fields based on neurophysiological data.	Philadelphia, Pennsylvania, USA 2011
Lead Developer COMPUTATIONAL NEUROSCIENCE RESEARCH GROUP, UNIVERSITY OF WATERLOO <ul style="list-style-type: none">• Designed and implemented GPU backend for Nengo neural simulation package.	Waterloo, Ontario, Canada 2010-2011
Developer ACRONYM SOFTWARE <ul style="list-style-type: none">• Implemented UI features for wood and masonry engineering software in C++ and C#.	Waterloo, Ontario, Canada 2009

Skills

TensorFlow, PyTorch, Python, Linux, C, C++, MPI, CUDA, LaTeX, Git, Java, Scheme