Christopher Srinivasa, PhD

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Education

- **University of Toronto** — Toronto, ON
  Ph.D. Electrical and Computer Engineering — *2012 – 2018*
  - Specializations: Machine Learning, Combinatorial Optimization, Probabilistic Graphical Models, Factor Graphs and Message Passing Algorithms
  - Thesis: New Message Passing Methods for Min-Max and Sum-Product Inference
  - Advisor: Brendan J. Frey
- **University of Ottawa** — Ottawa, ON
  M.A.Sc. Electrical and Computer Engineering — *2009 – 2011*
  - Specializations: Signal Processing, Machine Learning, Audio Analysis and Compression
  - Thesis: Graph Theory for the Discovery of Non-Parametric Audio Objects
  - Advisor: Martin Bouchard
- **McGill University** — Montreal, QC
  B.Eng. Honours Electrical Engineering — *2005 – 2009*
  - Specializations: Signal Processing, Automatic Speech Recognition
  - Thesis: Network Implementation of A Software Based Speech Recognition System
  - Advisor: Richard Rose
  - Grade Point Average: 3.78/4.00
  - Transferred over from Carleton University, Ottawa, ON after first year in B.Eng. Computer Systems Engineering program (2004 - 2005) where Grade Point Average was 11.40/12.00

Graduate Coursework

- **Algorithms and Machine Learning**

Algorithms and Data Structures	University of Toronto
Inference Algorithms	University of Toronto
Advanced Inference Algorithms	University of Toronto
Research Topics in Statistical Machine Learning	University of Toronto
Applied Stochastic Processes	University of Toronto
Graphical Models	University of Ottawa
Modern Applied Computational Statistics	University of Ottawa
Data Mining and Concept Learning	University of Ottawa
Statistical and Syntactic Pattern Recognition	University of Ottawa

- **Signal Processing**

Adaptive Signal Processing	University of Ottawa
Digital Signal Processing	McGill University

- **Communications**

Telecommunication Network Architecture . . . . . McGill University

- **Applications**

  Sensory Systems and Signal Processing . . . . . University of Ottawa
  Speech Communications . . . . . McGill University
  Automatic Speech Recognition . . . . . McGill University

- **Business**

  Technology Business Plan Design . . . . . McGill University

Research Experience

- **Probabilistic and Statistical Inference Group** — University of Toronto
  Research Assistant — *Jan 2012 – present*
  - Researched, designed, and implemented machine learning algorithms.
  - Research done as part of doctoral degree.

- **Advanced Audio Systems Group** — Communications Research Center of Canada
  Audio Coding Algorithm Researcher and Developer — *May 2009 – July 2011*
  - Researched, designed, and implemented object-based audio coding schemes.
  - Research done as part of masters degree.

Teaching Experience

- **Digital Signal Processing (ELG 4577)** — University of Ottawa
  Teaching Assistant — *Winter 2010*
  - Led weekly labs and tutorials.

- **Signal and System Analysis (ELG 3525)** — University of Ottawa
  Teaching Assistant — *Fall 2009*
  - Led weekly labs and tutorials.
  - Graded lab reports and quizzes.

Work Experience

- **Borealis AI, RBC Institute for Research** — Toronto, ON
  Machine Learning Research Team Lead — *Jan 2017 – present*
  - Lead team performing fundamental research in machine learning.
  - Publish in top-tier machine learning conferences.
  - Provide guidance and mentorship in defining promising machine learning research directions.

- **JVM Informatique Canada Inc.** — Brossard, QC
  Voice over Internet Protocol Researcher and Developer — *May 2006 – August 2008*

- Researched, designed, implemented, and maintained voice over internet protocol telephone networks.
- Wrote instruction manuals on voice over internet protocol telephone network usage.
- Provided corporate technical support.
- Work done during summers.

Honours

- **Dean's Honour List** McGill University
  Academic Excellence *2009*
  - For ranking in top 10% of faculty's graduating class.
- **Distinction** McGill University
  Academic Excellence *2009*
  - For ranking in top 25% of faculty's graduating class.
- **Dean's Honour List** McGill University
  Academic Excellence *2007*
  - For ranking in top 10% of faculty.
- **Dean's Honour List** Carleton University
  Academic Excellence *2005*
  - For having a grade point average greater than 10.00/12.00.

Memberships

- **Golden Key International Honour Society** McGill University
  McGill University Chapter *2006 – present*
  - By invitation only in recognition of outstanding academic achievement and excellence.

Awards

- **Gopal and Sudhir Khare Memorial Prize** McGill University
  $300 *August 2007*
  - Awarded on the basis of high academic standing.
- **Engineering Award** McGill University
  $200 *August 2007*
  - For ranking in top 5% of faculty.

Scholarships and Bursaries

- **Alexander Graham Bell Canada Graduate Scholarship (CGS D)** NSERC
  $35 000 year *May 2013 – April 2016*

- **Queen Elizabeth II Scholarship** — University of Toronto
  $15 000/year, Continuation Declined in April 2013 — *January 2013 – December 2013*
- **Ontario Graduate Scholarship** — Government of Ontario
  $15 000/year — *January 2012 – December 2012*
- **Alexander Graham Bell Canada Graduate Scholarship (CGS M)** — NSERC
  $17 500/year — *May 2010 – April 2011*
- **Research Bursary** — Communications Research Center of Canada
  $5 000/year — *May 2010 – April 2011*
- **Excellence Scholarship** — University of Ottawa
  Tuition Fees — *May 2010 – April 2011*
- **Research Bursary** — Communications Research Center of Canada
  $15 000/year — *May 2009 – April 2010*
- **Admission Scholarship** — University of Ottawa
  Tuition Fees and $1 500/year — *May 2009 – April 2010*
- **Admission Scholarship** — Carleton University
  $4 500/year, Continuation Declined in April 2005 — *September 2004 – August 2008*

Publications and Patents

[1] C. Srinivasa, I. Givoni, S. Ravanbakhsh, and B. J. Frey, "Min-max propagation," in *Advances in Neural Information Processing Systems (NIPS)*, Long Beach , CA, 2017.

[2] C. Srinivasa, S. Ravanbakhsh, and B. Frey, "Survey propagation beyond constraint satisfaction problems," in *International Conference on Artificial Intelligence and Statistics (AISTATS)*, Cadiz, Spain, 2016.

[3] S. Ravanbakhsh, C. Srinivasa, B. Frey, and R. Greiner, "Min-max problems on factor-graphs," in *International Conference on Machine Learning (ICML)*, Beijing, China, 2014.

[4] C. Srinivasa, M. Bouchard, R. Pichevar, and H. Najaf-Zadeh, "Graph theory for the discovery of non-parametric audio objects," in *The 11th International Conference on Information Sciences, Signal Processing and their Applications: Special Sessions (ISSPA2012: Special Sessions)*, Montreal, Canada, Jul. 2012.

[5] C. Srinivasa, R. Pichevar, H. Najaf-Zadeh, and M. Bouchard, "Integration of auditory masks into a locally competitive algorithm for sparse representations of audio signals," in *The 11th International Conference on Information Sciences, Signal Processing and their Applications: Special Sessions (ISSPA2012: Special Sessions)*, Montreal, Canada, Jul. 2012.

[6] R. Pichevar, H. Najaf-Zadeh, F. Mustiere, C. Srinivasa, and H. Lahdili, "Sparse object-based audio coding using non-negative matrix factorization of spikegrams," in *Workshop : Signal Processing with Adaptive Sparse Structured Representations (SPARS11)*, Edinburgh, Scotland, Jun. 2011.

[7] R. Pishehvar, C. Srinivasa, H. Najaf-Zadeh, F. Mustiere, H. Lahdili, and L. Thibault, "Signal coding with adaptive neural network," U.S. Patent 13/188,915, 2011.

[8] R. Pishehvar, H. Najaf-Zadeh, F. Mustiere, C. Srinivasa, H. Lahdili, and L. Thibault, "Sparse object-based audio coding using non-negative matrix factorization of spikegrams," U.S. Patent 61/494,460, 2011.

Technical Skills

- Markup Languages
  - LaTeX, Word
- Operating Systems
  - Unix, Windows
- Programming Languages
  - Assembly, C, C++, Python, Java, MySQL
- Specialized Software
  - MATLAB, R
- Spoken and Written Languages
  - English, French