

# Curriculum Vitae

Yichuan Tang

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University of Toronto, Ontario, Canada.  
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## Academic Career

Doctor of Philosophy in Computer Science,  
University of Toronto, Toronto, Ontario, Canada.  
Supervised by Prof. Geoffrey Hinton and Prof. Ruslan Salakhutdinov.  
2010-2015. GPA: 4.0/4.0.

Master of Mathematics in Computer Science,  
University of Waterloo, Waterloo, Ontario, Canada.  
Supervised by Prof. Chris Eliasmith.  
2008-2010. Grade average: 97/100.

Bachelors of Applied Science in Mechatronics Engineering,  
University of Waterloo, Waterloo, Ontario, Canada. 2003-2008.

## Publications

### Refereed Journal Papers

1. Goodfellow et al.,  
Challenges in representation learning: A report on three machine learning contests.  
*Neural Networks*, 64:59-63 (2015)
2. Chris Eliasmith, Terrence C. Stewart, Xuan Choo, Trevor Bekolay, Travis DeWolf,  
Yichuan Tang, and Daniel Rasmussen (2012)  
A Large-Scale Model of the Functioning Brain.  
*Science*, 30 November 2012: Vol. 338 no. 6111 pp. 1202-1205.
3. Terrence C. Stewart, Yichuan Tang, and Chris Eliasmith (2011)  
A biologically realistic cleanup memory: Autoassociation in spiking neurons.  
*Cognitive Systems Research*, 12, 84-92.

## Refereed Conference Papers

4. Yichuan Tang, Nitish Srivastava and Ruslan Salakhutdinov (2014)  
Learning Generative Models using Visual Attention  
(*NIPS 28*) *Neural Information Processing Systems, 2014*, Montreal, Quebec, Canada.
5. Yichuan Tang and Ruslan Salakhutdinov (2013)  
Learning Stochastic Feedforward Neural Networks  
(*NIPS 27*) *Neural Information Processing Systems, 2013*, Lake Tahoe, Nevada, USA.
6. Yichuan Tang, Ruslan Salakhutdinov and Geoffrey Hinton (2013)  
Tensor Analyzers  
(*ICML 2013*) *30th International Conference on Machine Learning*, Atlanta, Georgia, USA.
7. Yichuan Tang, Ruslan Salakhutdinov and Geoffrey Hinton (2012)  
Deep Mixtures of Factor Analysers.  
(*ICML 2012*) *29th International Conference on Machine Learning*, Edinburgh, Scotland.
8. Yichuan Tang, Ruslan Salakhutdinov and Geoffrey Hinton (2012)  
Deep Lambertian Networks.  
(*ICML 2012*) *29th International Conference on Machine Learning*, Edinburgh, Scotland.
9. Yichuan Tang, Ruslan Salakhutdinov and Geoffrey Hinton (2012)  
Robust Boltzmann Machines for Denoising and Recognition.  
(*CVPR 2012*) *IEEE Computer Vision and Pattern Recognition*, Providence, Rhode Island.
10. Yichuan Tang and Abdel-rahman Mohamed (2012)  
Multiresolution Deep Belief Networks.  
(*AISTATS 2012*) *15th International Conference on Artificial Intelligence and Statistics*, La Palma, Canary Islands.
11. Yichuan Tang and Chris Eliasmith (2010)  
Deep Networks for Robust Visual Recognition.  
(*ICML 2010*) *27th International Conference on Machine Learning*, Haifa, Israel.

## Refereed Workshop Papers and Abstracts

12. Yichuan Tang (2013)  
Deep Learning using Linear Support Vector Machines  
*ICML 2013 Challenges in Representation Learning Workshop*, Atlanta, Georgia, USA.
13. Yichuan Tang and Ruslan Salakhutdinov (2013)  
A New Learning Algorithm For Stochastic Feedforward Neural Networks  
*ICML 2013 Challenges in Representation Learning Workshop*, Atlanta, Georgia, USA.
14. Yichuan Tang, Ruslan Salakhutdinov and Geoffrey Hinton (2012)  
Tensor Analyzers.  
*NIPS 2012 Workshop on Deep Learning*, Lake Tahoe, Nevada, USA.
15. Yichuan Tang and Ilya Sutskever (2012)  
Data Normalization in the Learning of Restricted Boltzmann Machines.  
*AISTATS 2012 Breaking News Abstracts*, La Palma, Canary Islands.
16. Yichuan Tang (2010)  
Gated Boltzmann Machine for Recognition under Occlusion.  
*NIPS Workshop on Transfer Learning by Learning Rich Generative Models*, Whistler, Canada.

## Unrefereed Technical Reports

17. Yichuan Tang and Geoffrey Hinton (2011)  
Coarse-to-fine Restricted Boltzmann Machines.  
*Technical Report*, Department of Computer Science, University of Toronto.
18. Yichuan Tang and Xuan Choo (2009)  
Intrinsic divergence for face recognition.  
*Technical Report*, Department of Computer Science, University of Waterloo.

## Professional Experiences

*Deep Learning Startup Co-founder* 07/2015 - Present  
Perceptual Machines Inc., Toronto, ON

- Developed real-time algorithms for Perception, Machine Learning, and Artificial Intelligence
- Business strategy, planning, and financing

*Computer Vision Researcher* 01/2008 - 08/2008  
Miovision Inc., Waterloo, ON

- Researched and developed algorithms for automated tracking of vehicles at intersections
- Implemented fast local descriptors for tracking, motion estimation, object modeling
- Developed a parallel architecture for pipelined process of video data
- Investigated probabilistic methods for object parts tracking

*Computer Vision Researcher* 05/2007 - 08/2007  
Evolution Robotics, Pasadena, CA

- Developed high performance face recognition algorithm for robotic applications
- Developed methods for tracking and 3D reconstruction of frontal face images
- Investigated various techniques to correct for pose and illumination variations in face recognition
- Researched, implemented, and designed various local descriptors for interest point extraction from images

*Computer Vision Researcher* 01/2006 - 04/2006  
Epson Canada Ltd., Toronto, ON 09/2006 - 12/2006

- Invented, developed and completed fast text segmentation algorithms for Epson's All-In-One printers
- Face recognition project - developed face alignment solution to increase accuracy
- Developed video and audio processing software for high level information retrieval
- Designed, implemented and released software for image content based retrieval and similarity search

## Patent

- Tang, Y., Zhou, H. "Method and apparatus for identifying regions of different content in an image", **U.S. Patent 7,840,071**. Nov. 23, 2010.
- Eliasmith C., Stewart T., DeWolf, T., Bekolay, T., Choo, X., Tang, Y., Rasmussen, D. "Methods and System For Artificial Cognition.", USPTO Patent Pending 20140156577.

## Scholarships and Awards

- Ontario Graduate Scholarship (CAD \$15,000, 2013-2014)
- Achieved the #1 ranking out of 100,000+ competitors on Kaggle.com (May, 2013)
- ICML 2013 Representation Learning Workshop: face expression recognition contest (1st Place, 2013)
- ICML 2013 Representation Learning Workshop: multimodal learning contest (1st Place, 2013)
- Kaggle's Marinexplore and Cornell University Whale Detection Challenge (3rd Place, 2013)
- ICML 2012 Student Traveling Scholarship (USD \$1,000, 2012)
- NSERC Doctoral Postgraduate Scholarship (PGS-D) (CAD \$63,000, 2010-2013)
- Ontario Graduate Scholarship in Science and Technology (CAD \$5,000, 2010)
- Graduate student prize in the 2009 Canadian Intelligent Systems Challenge (CAD \$1,000, 2009)
- Queen Elizabeth II Scholarship (CAD \$14,000, 2003-2008)
- University of Waterloo Entrance Scholarship (CAD \$3,000, 2003)
- Canadian National Master in Chess (2003)

## Reviewing

Reviewer for Neural Information Processing Systems (**NIPS**) 2012, 2013, 2014, 2015, 2016; International Conference on Machine Learning (**ICML**) 2013, 2014, 2015, 2016; Journal of Machine Learning Research (**JMLR**) 2013; International Conference on Learning Representations (**ICLR**) 2014, 2015, 2016, 2017.

## Invited Talks

- Learn AI With The Best Digital Conference. 19 Sept, 2015. BeMyApp Inc.
- Re-Work Deep Learning Summit Boston 2015. 25-26 May, 2015. Boston, Massachusetts, USA.
- Re-Work Deep Learning Summit San Francisco 2015. 29-30 Jan, 2015. San Francisco, California, USA.
- Harvard Machine Learning group seminar, 20 Nov, 2013. Boston, Massachusetts, USA.
- M.I.T. Computer Vision group seminar, 19 Nov, 2013. Boston, Massachusetts, USA.