Jimmy L. Ba

Email: jimmy@cs.toronto.edu
Homepage: http://jimmylba.github.io
University of Toronto

RESEARCH INTERESTS

Jimmy Ba is an Assistant Professor in the Department of Computer Science, University of Toronto starting 2018. His research focuses on developing new learning algorithms. He is broadly interested in questions related to computational cognitive science, artificial intelligence, reinforcement learning, computational biology and statistical learning theory.

EDUCATION

Doctor of Philosophy, Electrical & Computer Engineering **2014 - 2017**
University of Toronto, Toronto, Ontario

Master of Applied Science, Electrical & Computer Engineering **2011 - 2014**
University of Toronto, Toronto, Ontario

Bachelor of Applied Science, Electrical & Computer Engineering **2007 - 2011**
University of Toronto, Toronto, Ontario

FELLOWSHIPS & AWARDS

Facebook Graduate Student Fellowship **2016 – 2018**

Massey College Junior Fellowship **2013 – 2017**

University of Toronto **2009 – Present**

- **Rogers Scholarship in the Department of Electrical and Computer Engineering** (2011 - Present)
- **Electrical and Computer Engineering Outstanding Student Award** (2009 - 2011)
- **University of Toronto Excellent Award in the Natural Science and Engineering** (2009 - 2010)
- **Collage of Physics and Engineering Science Dean's Scholarship (**2007 - 2008)

Others

- **Canadian Euclid Mathematic Competition, Special Award** (2007)

SELECTED PUBLICATIONS

Publications in refereed proceedings:

- Wu, Y., Mansimov, E., Liao, S., Grosse, R., **Ba, J.**, (2017),"Scalable trust-region method for deep reinforcement learning using Kronecker-factored approximation", *Advances in the 2017 Neural Information Processing System (NIPS'17)*
- Kraus, O., Grys, B., **Ba, J.**, Chong, Y., Frey, B., Bonne, C. and Andrews, B., (2017), "Automated Analysis of High-content Microscopy Data with Deep Learning", *Molecular Systems Biology, 2017*
- **Ba, J.**, Grosse, R. and Martens, J., (2017), "Distributed Second-Order Optimization using Kronecker-factored Approximation", *Proceedings of the 2017 International Conference on Learning Representations (ICLR'17)*

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- **Ba, J.**, Kiros, J. R. and Hinton, G., (2016), "Layer Normalization", (*2016) Neural Information Processing System (NIPS'16) Deep Learning Symposium*
- **Ba, J.**, Hinton, G., Mnih, V., Leibo, J. and Ionescu, C., (2016), "Using Fast Weight to Attend to the Recent Past", *Advances in the 2016 Neural Information Processing System (NIPS'16)*
- Kraus, O., **Ba, J.** and Frey, B., (2016), "Classifying Microscopy Images Using Convolutional Multiple Instance Learning", *Bioinformatics 32(12), 52-59*
- Mansim, E., Parisotto, E., **Ba, J.** and Salakhutdinov, R., (2016), "Generating Images From Captions with Attention", *Proceedings of the 2016 International Conference on Learning Representations (ICLR'16)*
- Parisotto, E., **Ba, J.** and Salakhutdinov, R., (2016), "Actor-Mimic: Deep Multitask and Transfer Reinforcement Learning", *Proceedings of the 2016 International Conference on Learning Representations (ICLR'16)*
- **Ba, J.**, Grosse, R., Salakhutdinov, R. and Frey, B., (2015), "Learning Wake-Sleep Recurrent Attention Models", *Advances in the 2015 Neural Information Processing System (NIPS'15)*
- **Ba, J.**, Swersky, K., Fidler, S. and Salakhutdinov, R., (2015), "Predicting Deep Zero-Shot Convolutional Neural Networks using Textual Descriptions", *Proceedings of 2015 International Conference on Computer Vision (ICCV'15),*
- Xu, K.**, Ba, J.**, Kiros, R., Cho, K., Courville, A., Salakhutdinov, R., Zemel, R. and Bengio, Y., (2015), "Show, Attend and Tell: Neural Image Caption Generation with Visual Attention", *Proceedings of 2015 International Conference on Machine Learning (ICML'15)*
- **Ba, J.** and Kingma D., (2015), "Adam: A Method for Stochastic Optimization", *Proceedings of the 2015 International Conference on Learning Representations (ICLR'15)*
- **Ba, J.,** Mnih, V. and Kavukcuoglu K., (2015), "Multiple Object Recognition with Visual Attention", *Proceedings of the 2015 International Conference on Learning Representations (ICLR'15)*
- **Ba, J.,** Xiong and H, Frey, B., (2014), "Making Dropout Invariant to Transformations of Activation Functions and Inputs", *Advances in the 2014 Neural Information Processing System (NIPS'14) deep learning workshop*
- **Ba, J.** and Caruana, R., (2014), "Do deep nets really need to be deep?", *Advances in the 2014 Neural Information Processing System (NIPS'14)*
- **Ba, J.** and Frey, B., (2013), "Adaptive Dropout for Training Deep Neural Networks", *Advances in the 2013 Neural Information Processing System (NIPS'13)*

INVITED TALKS

University of Southern California Visa Rsearch Machine Learning Seminar **Nob 2017**
"Progress and Challenges in Training Neural Networks"

Stanford Artificial Intelligence Group **Feb 2017**
"Interpretable and Scalable Deep Learning"

NIPS Deep Learning Sympothism **Dec 2016**
"Layer Normalization"

Google Brain, Mountain View, CA **Nov 2016**
"Distributed Asynchronous Approximate Natural Gradient"

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Stanford Artificial Intelligence Group **Nov 2016**
"Scaling-up Deep Learning using Distributed Asynchronous Second-Order Optimization"

MIT CSAIL Computer Vision Research Group **July 2015**
"Learning Visual Attention for Classification and Zero-shot Learning"

Fields Institute, Toronto **June 2015**
"Graphical Models and Reinforcement Learning on Visual Attention"

Google DeepMind, London, England **Dec 2014**
"Multiple Object Recognition with Visual Attention"

University of Toronto Machine Learning Group **Dec 2013**
"Model Compression and Neural Networks"

Microsoft Research, Redmond, WA **Nov 2013**
"Do Deep Nets Really Need to be Deep?"

TEACHING EXPERIENCE

ECE521 Inference Algorithms and Machine Learning **2017**
Course intructor and coordinator, University of Toronto

ECE521 Inference Algorithms and Machine Learning **2016**
Head TA and guest lecturer, University of Toronto

ECE521 Inference Algorithms and Machine Learning **2015**
Guest lecturer on inference algorithms and message-passing, University of Toronto

ECE521 Inference Algorithms and Machine Learning **2015**
Head TA, designed two new assignments, 7 weeks of tutorial sessions, University of Toronto

CSC2523 Deep Learning in Computer Vision **2015**
Guest lecturer on neural programming, University of Toronto

CSC321 Introduction to Neural Networks and Machine Learning **2014**
Guest lectuer on probability theory and inference algorithms, University of Toronto

CSC321 Introduction to Neural Networks and Machine Learning **2014**
Tutorial TA, 4 weeks of tutorial sessions and lecture assistant, University of Toronto

ECE1510/CSC2535 Advanced Inference Algorithms/Advanced Machine Learning **2014**
Guest lecturer on deep learning, University of Toronto

ECE521 Inference Algorithms and Machine Learning **2013**
Guest lecturer on neural netowrks and deep learning, University of Toronto

ECE521 Inference Algorithms and Machine Learning **2013**
Head TA, 6 weeks of tutorial sessions, University of Toronto

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REVIEW AND SERVICE

Conference Reviewer

Neural Information Processing Systems (NIPS)	**2017**
International Conference on Learning Representations (ICLR)	**2017**
International Conference on Machine Learning (ICML)	**2016**
European Conference on Computer Vision (ECCV)	**2016**
IEEE Conference on Computer Vision and Pattern Recognition (CVPR)	**2016**
International Conference on Learning Representations (ICLR)	**2016**
International Conference on Machine Learning (ICML)	**2015**
International Conference on Learning Representations (ICLR)	**2015**
IEEE Conference on Computer Vision and Pattern Recognition (CVPR)	**2013**
IEEE Conference on Computer Vision and Pattern Recognition (CVPR)	**2012**

INDUSTRY EXPERIENCE

Research Intern **2014**
Google Deepmind, London, England

Research Intern **2013**
Microsoft Research, Redmond, Washington

Software Development Engineer **2009**
Sybase iAnywhere Inc., Waterloo, Ontario