SOHAM DE

Research Scientist, DeepMind

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EXPERIENCE

Research Scientist
DeepMind

Sep 2018 – Ongoing London, United Kingdom

Understanding neural networks.

Research Intern
DeepMind

June 2017 – Oct 2017 London, United Kingdom

Automatic adaptation of optimizer hyperparameters.

Research Intern
Toyota Technological Institute at Chicago

May 2012 – July 2012 Chicago, United States

Learning subword units for automatic speech recognition.

PUBLICATIONS

Conference Proceedings

- Sankararaman, Karthik A et al. (2020). "The impact of neural network overparameterization on gradient confusion and stochastic gradient descent". In: *International Conference on Machine Learning (ICML)*.
- Smith, Samuel L et al. (2020). "On the generalization benefit of noise in stochastic gradient descent". In: *International Conference on Machine Learning (ICML)*.
- Dvijotham, Krishnamurthy et al. (2019). "Efficient neural network verification with exactness characterization". In: *Uncertainty in Artificial Intelligence (UAI)*.
- Qin, Chongli et al. (2019). "Adversarial robustness through local linearization". In: *Neural Information Processing Systems (NeurIPS)*.
- De, Soham et al. (2017). "Automated inference with adaptive batches". In: *Artificial Intelligence and Statistics (AISTATS)*.
- De, Soham et al. (2017). "Understanding norm change: An evolutionary game-theoretic approach". In: *Conference on Autonomous Agents and MultiAgent Systems (AAMAS)*.
- Li, Hao et al. (2017b). "Training quantized nets: A deeper understanding". In: *Neural Information Processing Systems (NeurIPS)*.
- De, Soham et al. (2016). "Efficient distributed SGD with variance reduction". In: *International conference on data mining (ICDM)*.

Journal Articles

- Jackson, Joshua Conrad et al. (2019). "The loosening of American culture over 200 years is associated with a creativity–order trade-off". In: *Nature human behaviour* 3.3.
- De, Soham et al. (2015). "The inevitability of ethnocentrism revisited: Ethnocentrism diminishes as mobility increases". In: *Scientific reports* 5.1.

RESEARCH INTERESTS

- Deep Learning
- Machine Learning
- Optimization

EDUCATION

Ph.D. Computer Science
University of Maryland, College Park, US

Aug 2013 – July 2018

Advisors: Tom Goldstein and Dana S. Nau

B.E. Computer Science & Engineering
Jadavpur University, Kolkata, India

Aug 2009 – May 2013

TEACHING

Teaching Assistant
University of Maryland, College Park, US

- Algorithms (2013-2014)
- Computational Game Theory (2014)
- Discrete Structures (2016-2018)

INVITED TALKS

- Google Brain (Mountain View), Nov 2019
- Facebook AI Research (NY), Oct 2019
- New York University, Oct 2019

AWARDS & FELLOWSHIPS

- Best Student Paper at ICML Workshop on Principled Approaches to DL, 2017
- Future of Information Alliance Grant, 2015
- Dean's Fellowship, University of Maryland, College Park, 2013-15

REVIEWING SERVICE

- NeurIPS (2016, 2019, 2020)
- ICML (2019)
- ICLR (2020)
- JMLR (2020)
- Neural Computation (2020)

Short Papers & Workshops

- Smith, Samuel et al. (2019). *Momentum Enables Large Batch Training*. ICML workshop on theoretical physics for deep learning.
- Basu, Amitabh et al. (2018). *Convergence guarantees for RMSProp and ADAM in non-convex optimization and their comparison to Nesterov acceleration on autoencoders*. ICML workshop on modern trends in nonconvex optimization for machine learning.
- De, Soham et al. (2018). *Tipping points for norm change in human cultures*. International conference on social computing, behavioral-cultural modeling and prediction (SBP-BRiMS).
- Li, Hao et al. (2017a). *Towards a Deeper Understanding of Training Quantized Neural Networks*. ICML 2017 workshop on principled approaches to deep learning.
- Pal, Siddharth et al. (2017). *Visibility of Nodes in Network Growth Models*. International conference and school on network science (NetSciX).
- Xu, Zheng et al. (2016). *An empirical study of ADMM for nonconvex problems*. NIPS workshop on nonconvex optimization for machine learning: theory and practice.
- Singh, Bharat et al. (2015). *Layer-specific adaptive learning rates for deep networks*. International conference on machine learning and applications (ICMLA).
- De, Soham et al. (2012). *Plagiarism Detection in Polyphonic Music using Monaural Signal Separation*. Annual conference of the international speech communication association (InterSpeech).