Curriculum Vitae: Soham De

Contact Information

DeepMind, c/o Google UK,
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Research

Machine Learning, Optimization, Game Theory

Education

University of Maryland, College Park, MD, USA
Ph.D., Computer Science, 2013 - 2018
Advisors: Dana Nau, Tom Goldstein

Jadavpur University, Kolkata, India
B.E., Computer Science & Engineering, 2009 - 2013

Professional Experience

Research Scientist at DeepMind, Google UK September 2018 - Present
Research in machine learning with emphasis on optimization, generalization and adversarial robustness of models.

Research Intern at DeepMind, Google UK June-Oct 2017
Research in automated optimization methods for training neural networks.

Research Intern at Toyota Technological Institute at Chicago May-July 2012
Research in learning subword units for automatic speech recognition systems.

Journal Publications

1. Joshua Conrad Jackson, Michele Gelfand, Soham De, and Amber Fox. *The loosening of American culture over 200 years is associated with a creativity-order trade-off.* Nature Human Behaviour, 2019.
2. Soham De, Michele Gelfand, Dana Nau and Patrick Roos. *The Inevitability of Ethnocentrism Revisited: Ethnocentrism Diminishes As Mobility Increases.* Scientific Reports, 2015. (Impact Factor: 5.525)

Conference Publications

1. Chongli Qin, James Martens, Sven Gowal, Dilip Krishnan, Alhussein Fawzi, Soham De, Robert Stanforth, and Pushmeet Kohli. *Adversarial Robustness through Local Linearization.* NeurIPS 2019. (Acceptance Rate 21.2%)
2. Krishnamurthy Dvijotham, Robert Stanforth, Soham De, Sven Gowal, Chongli Qin, Pushmeet Kohli. *Scaling tight relaxations for neural network verification.* UAI, 2019. (Oral; Acceptance Rate: 7.7%)
3. Soham De*, Hao Li*, Zheng Xu, Christoph Studer, Hanan Samet and Tom Goldstein, *Training Quantized Nets: A Deeper Understanding.* NIPS 2017 (* denotes equal contribution). (Acceptance Rate: 20.9%)
4. Soham De, Abhay Yadav, David Jacobs and Tom Goldstein. *Automated Inference with Adaptive Batches.* AISTATS, 2017. (Oral; Acceptance Rate: 5.2%)
5. Soham De, Dana Nau and Michele Gelfand. *Understanding Norm Change: An Evolutionary Game-Theoretic Study.* AAMAS, 2017. (Oral; Acceptance Rate: 21.3%)
6. Carlos Castillo*, Soham De*, Xintong Han*, Bharat Singh*, Abhay Kumar Yadav* and Tom Goldstein. Son of Zorn's Lemma: Targeted Style Transfer Using Instance-aware Semantic Segmentation. ICASSP, 2017 (* denotes equal contribution).

7. Siddharth Pal, Soham De, Tanmoy Chakraborty and Ralucca Gera. *Visibility of Nodes in Network Growth Models.* NetSciX, 2017. (Oral)
8. Soham De and Tom Goldstein. *Efficient Distributed SGD with Variance Reduction.* ICDM, 2016. (Oral; Acceptance Rate: 8.5%)
9. Bharat Singh, Soham De, Yangmuzi Zhang, Tom Goldstein and Gavin Taylor. *Layer-Specific Adaptive Learning Rates for Deep Networks.* ICMLA, 2015.
10. Soham De, Indradyumna Roy, Tarunima Prabhakar, Kriti Suneja, Sourish Chaudhuri, Rita Singh and Bhiksha Raj. *Plagiarism Detection in Polyphonic Music Using Monaural Signal Separation.* Interspeech, 2012.

Short Papers & Workshop Publications

1. Samuel Smith, Erich Elsen and Soham De. *Momentum Enables Large Batch Training.* ICML Workshop on Theoretical Physics for Deep Learning, 2019.
2. Amitabh Basu, Soham De, Anirbit Mukherjee and Enayat Ullah. *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, 2018.
3. Soham De, Dana S. Nau, Xinyue Pan, and Michele J. Gelfand. *Tipping Points for Norm Change in Human Cultures.* SBP-BRiMS (Short Paper), 2018.
4. Soham De*, Hao Li*, Zheng Xu, Christoph Studer, Hanan Samet and Tom Goldstein, *Towards a Deeper Understanding of Training Quantized Neural Networks.* ICML Workshop on Principled Approaches to Deep Learning (PADL) 2017 (* denotes equal contribution). (Acceptance Rate: 20.9%)
5. Zheng Xu, Soham De, Mario A. T. Figueiredo, Christoph Studer, Tom Goldstein. *An Empirical Study of ADMM for Nonconvex Problems.* NIPS 2016 Workshop on Nonconvex Optimization for Machine Learning: Theory and Practice.
6. Doug Burdick, Soham De, Louiqa Raschid, Mingchao Shao, Zheng Xu, Elena Zotkina. *resMBS: Constructing a Financial Supply Chain from Prospectus.* Second International Workshop on Data Science for Macro-Modeling, ACM, 2016.
7. Zahra Ashktorab, Srijan Kumar, Soham De, and Jennifer Golbeck. *iAnon: Leveraging Social Network Big Data to Mitigate Behavioral Symptoms of Cyberbullying.* iConference (Social Media Expo), 2014.

Awards

Fellowships

- Future of Information Alliance Fellowship — 2015
- Dean's Fellowship, University of Maryland, College Park — 2013-15

Paper Awards

- Best Student Paper at ICML Workshop on Principled Approaches to DL — 2017

Other Awards

- AAAS/Science Program for Excellence in Science — 2016-19
- KVPY (Kishore Vaigyanik Protsahan Yojana) Scholar — 2008-09

Teaching Experience

Teaching Assistant, University of Maryland, College Park

Algorithms (Instructor: Clyde Kruskal) — Spring 2014 & Fall 2013
Computational Game Theory (Instructor: Dana Nau) — Fall 2014
Discrete Structures (Instructor: Tom Goldstein) — Fall 2016, Fall 2017 & Spring 2018

Service

Reviewer at: NIPS 2016, ICML 2019, Neurips 2019, ICLR 2020