Zhe Gan

600 South LaSalle Str.
Apt. 1304
Durham, NC 27705

Phone: (919) 808-7128
Email: zhe.gan@duke.edu
Homepage: http://zhegan27.github.io/

Research Interests

I focus on designing efficient and scalable Bayesian inference algorithms for deep learning models with applications in natural language processing and computer vision.

Education

- Duke University, Durham, NC

    Ph.D., Electrical and Computer Engineering   09/2013 - present

- Peking University, Beijing, China

    M.S., Electrical Engineering   09/2010 - 07/2013

    B.S., Electrical Engineering   09/2006 - 07/2010

Experience

- **Information Initiative at Duke (iiD)**   09/2013 - present
    Research Assistant. Advisor: Prof. Lawrence Carin

    (*i*) Developing deep generative models for image analysis, topic modeling and sequence modeling

    (*ii*) Designing stochastic gradient variational inference algorithms and stochastic gradient MCMC methods for scalable Bayesian inference

    (*iii*) Nonparametric discriminative factor modeling for gene-expression analysis

- **Microsoft Research Redmond**   05/2016 - 08/2016
    Research Intern. Advisor: Xiaodong He, Jianfeng Gao, Li Deng, Ph.D

    (*i*) image captioning: using deep learning techniques to improve the state-of-the-art of image and video captioning.

    (*ii*) deep conflation: using deep learning techniques to implement conflation for business data analytics.

- **Adobe Research**   06/2015 - 09/2015
    Data Scientist Intern. Advisor: Hung Bui, Ph.D

    Recurrent neural networks (RNN) for NLP applications, including sentence classification, sentence retrieval and sentence generation

Publications

Arxiv

1. Y. Pu, **Z. Gan**, R. Henao, C. Li, S. Han and L. Carin "Stein Variational Autoencoder", *arXiv preprint arXiv:1704.05155*

2. Y. Pu, M. R. Min, **Z. Gan** and L. Carin "Adaptive Feature Abstraction for Translating Video to Language", *arXiv preprint arXiv:1611.07837*

3. **Z. Gan**, Y. Pu, R. Henao, C. Li, X. He and L. Carin "Unsupervised Learning of Sentence Representations using Convolutional Neural Networks", *arXiv preprint arXiv:1611.07897*

Referred Conference

1. Y. Zhang, **Z. Gan**, K. Fan, Z. Chen, R. Henao, D. Shen and L. Carin "Adversarial Feature Matching for Text Generation", *Int. Conf. Machine Learning* (**ICML**), 2017

2. Y. Zhang, C. Chen, **Z. Gan**, R. Henao and L. Carin "Stochastic Gradient Monomial Gamma Sampler", *Int. Conf. Machine Learning* (**ICML**), 2017

3. **Z. Gan**, C. Li, C. Chen, Y. Pu, Q. Su and L. Carin "Scalable Bayesian Learning of Recurrent Neural Networks for Language Modeling", *Association for Computational Linguistics (**ACL**)*, 2017 **Oral**

4. **Z. Gan**, C. Gan, X. He, Y. Pu, K. Tran, J. Gao, L. Carin and L. Deng "Semantic Compositional Networks for Visual Captioning", *Computer Vision and Pattern Recognition (**CVPR**)* 2017, **Spotlight**

5. C. Gan, **Z. Gan**, X. He, J. Gao and L. Deng "StyleNet: Generating Attractive Visual Captions with Styles", *Computer Vision and Pattern Recognition (**CVPR**)*, 2017

6. **Z. Gan**, P. D. Singh, A. Joshi, X. He, J. Chen, J. Gao and L. Deng "Character-level Deep Conflation for Business Data Analytics", *Int. Conf. Acoustics, Speech and Signal Processing* (**ICASSP**), 2017

7. Y. Xian, Y. Pu, **Z. Gan**, L. Lu and A. Thompson "Adaptive DCTNet for Audio Signal Classification", *Int. Conf. Acoustics, Speech and Signal Processing* (**ICASSP**), 2017

8. Q. Su, X. Liao, C. Li, **Z. Gan** and L. Carin "Unsupervised Learning with Truncated Gaussian Graphical Models", *Proc. American Association of Artificial Intelligence* (**AAAI**), 2017

9. Y. Zhang, **Z. Gan** and L. Carin "Generating Text via Adversarial Training", *NIPS Workshop*, 2016

10. Y. Xian, Y. Pu, **Z. Gan**, L. Lu and A. Thompson "Modified DCTNet for Audio Signals Classification", *Journal of the Acoustical Society of America*, 2016

11. Y. Pu, **Z. Gan**, R. Henao, X. Yuan, C. Li, A. Stevens and L. Carin "Variational Autoencoder for Deep Learning of Images, Labels and Captions", *Neural Information Processing Systems* (**NIPS**),2016

12. J. Song, **Z. Gan** and L. Carin "Factored Temporal Sigmoid Belief Networks for Sequence Learning", *Int. Conf. Machine Learning* (**ICML**),2016

13. C. Li, A. Stevens, C. Chen, Y. Pu, **Z. Gan** and L. Carin "Learning Weight Uncertainty with Stochastic Gradient MCMC for Shape Classification", *Computer Vision and Pattern Recognition (**CVPR**)* 2016, **Spotlight**

14. C. Chen, D. Carlson, **Z. Gan**, C. Li and L. Carin "Bridging the Gap Between Stochastic Gradient MCMC and Stochastic Optimization", *Artificial Intelligence and Statistics (**AISTATS**)* 2016, **Oral**

15. **Z. Gan**, C. Li, R. Henao, D. Carlson and L. Carin "Deep Temporal Sigmoid Belief Networks for Sequence Modeling", *Neural Information Processing Systems* (**NIPS**), 2015

16. R. Henao, **Z. Gan**, J. Lu and L. Carin "Deep Poisson Factor Modeling", *Neural Information Processing Systems* (**NIPS**), 2015

17. **Z. Gan**, C. Chen, R. Henao, D. Carlson and L. Carin "Scalable Deep Poisson Factor Analysis for Topic Modeling", *Int. Conf. Machine Learning* (**ICML**),2015

18. **Z. Gan**, R. Henao, D. Carlson and L. Carin "Learning Deep Sigmoid Belief Networks with Data Augmentation", *Artificial Intelligence and Statistics* (**AISTATS**), 2015

Book Chapter

1. **Z. Gan**, X. Yuan, R. Henao, E. Tsalik and L. Carin "Inference of Gene Networks Associated with the Host Response to Infectious Disease", Chapter 13 of Book *Big Data Over Networks*. Cambridge University Press. In Press.

Software Skills

Python, Matlab, R and C

Awards

ECE Fellowship, Duke University, 2013
National Scholarship, Department of Minister of Education of China, 2010-2013.

Teaching Experience

Teaching Assistant   09/2014-12/2014
   STA 601 - Bayesian and Modern Statistics
   Instructor: David Dunson, Ph.D
Teaching Assistant   01/2015-05/2015
   ECE 587 - Information Theory
   Instructor: Ahmad Beirami, Ph.D

Graduate Coursework

Bayesian and Modern Statistics, Probabilistic Machine Learning, Advanced Machine Learning, Statistical Inference, Statistical Computation, Information Theory, Graphical Models & Inference, Optimization For Engineers