Pengyu Cheng

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Research Interests

I am a Ph.D. student at Duke University. My research interests focus on Bayesian deep learning, geometric deep learning, and their applications in natural language processing. Currently, I am working on disentangled text generation and time-evolving graph generation.

Education

Duke University 08/2017–Present
Ph.D. Student, Electrical and Computer Engineering

Tsinghua University 08/2013–07/2017
B.S., Mathematics and Statistics

Experience

Information Initiative at Duke (iiD) 08/2017–Present
Research Assistant *Adviser: Lawrence Carin*
Bayesian deep learning, geometric deep learning, and their applications in natural language processing.

NEC Laboratories America, Inc. 05/2019–08/2019
Research Internship *Adviser: Martin Renqiang Min*
Disentangled text generation learning from an information-theoretic perspective.

Tsinghua Intelligent Vision Group (IVG) 03/2016–07/2016
Student Researcher *Adviser: Jiwen Lu*
Deep metric learning for person re-identification based on sequential frames information.

Student Research Program at Tsinghua 11/2015–05/2017
Student Researcher *Adviser: Xuegong Zhang*
Non-parametric k-sample tests with statistics based on local maximum energy distance.

Beijing Sogou Information Service Co., Ltd. 08/2014–09/2014
Research Internship *Mentor: Mao Wang*
Polygonal line-like city road data smoothing via Spline Interpolation; road data compressing via Douglas-Peucker algorithm.

Publications

- **P. Cheng**, Y. Li, X. Zhang, L. Chen, D. Carlson, L. Carin, "Dynamic Embedding on Textual Networks via a Gaussian Process", Under Review Submission to AAAI 2020
- **P. Cheng** *, D. Shen *, D. Sundararaman, X. Zhang, Q. Yang, M. Tang, A. Celikyilmaz, and L. Carin, "Learning Compressed Sentence Representations for On-Device Text Processing", Annual Meeting of the Association for Computational Linguistics (ACL), 2019 Oral
- **P. Cheng**, Y. Li, X. Zhang, L. Chen, D. Carlson, L. Carin, "Gaussian-Process-Based Dynamic Embedding for Textual Networks", Neural Information Processing Systems (NeurIPS) Workshop, 2019
- L. Chen, G. Wang, C. Tao, D. Shen, **P. Cheng**, X. Zhang, W. Wang, Y. Zhang, and L. Carin, "Improving Textual Network Embedding with Global Attention via Optimal Transport", Annual Meeting of the Association for Computational Linguistics (ACL), 2019

- C. Liu, J. Zhuo, **P. Cheng**, R. Zhang, J. Zhu, and L. Carin, "Understand and Accelerate Particle-based Variational Inference", International Conference on Machine Learning (ICML), 2019
- **P. Cheng**, C. Liu, C. Li, D. Shen, H. Ricardo, and L. Carin, "Straight-Through Estimator as Projected Wasserstein Gradient Flow", Neural Information Processing Systems (NeurIPS) Workshop, 2018 Spotlight

Academic Activities

- Conference reviewer/PC member for AAAI 2020 09/2019
- Teaching assistant for *Introduction to Deep Learning*, Instructor: Vahid Tarokh, Ph.D. 09/2019
- Oral Presentation at ACL 2019 07/2019
- Spotlight talk at NeurIPS 2019 Bayesian Deep Learning workshop 12/2018

Awards

- Fellowship of Electrical and Computer Engineering at Duke 08/2017
- First in Duke-Tsinghua Machine Learning Summer School (1/112) 08/2017
- Academic Excellence Award of Tsinghua University (top 30%) 10/2014
- Top 5 in the 18-th "Sogou Cup" Artificial Intelligence Programming Contest (5/200) 04/2014
- Silver medal in the 28-th Chinese Mathematical Olympiad (CMO) 01/2013
- First Prize in Chinese National Olympiad in Informatics in Provinces (NOIP) 11/2012

Technical Strengths

Computer Languages : Python (Tensorflow, Pytorch), R, C/C++

Software & Tools : LaTeX, Emacs, Mathematica, MATLAB, Excel, Markdown

Graduate Courses

Theoretical : Random Signals and Noise; Information Theory; Multivariate Statistical Analysis; Stochastic Processes; Compressed Sensing;

Engineering : Programming, Data Structure and Algorithms in C++; Pattern Recognition; Machine Learning; Text Data Analysis;