Yizhe Zhang

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Research Interest

My recent research focuses on 1) faithful/consistent/grounded text generation; 2) progressive/non-autoregressive text generation; 3) sequence-level objective for text modeling; 4) long-form text generation and understanding.

From the methodology perspective, I develop generic architectures/methods that can be applied to various language generation tasks using Deep Generative Models (DGM), MCMC and Reinforcement Learning (RL).

Experience

02/2018 – Present

Senior Researcher | Natural Language Processing @ Microsoft Research AI, Redmond, WA

- Manager: Dr. Bill Dolan
- Research topics: text generation, conversation modeling, faithful/consistent/grounded generation.

Education

08/2013 – 02/2018

Ph.D. in Machine Learning | Duke University, Durham, NC

- Advisor: Dr. Lawrence Carin

08/2015 – 02/2018

M.Sc. in Statistics | Duke University, Durham, NC

- Advisors: Drs. David Dunson, Scott Schmidler and Katherine Heller

08/2007 – 06/2011

B.Sc. in Physics | Nanjing University, Nanjing, China

- Department of Intensive Institution, Kuang Yamin Honors School

Publications

Peer-reviewed Conferences and Journals (* equally contributed)

- **Yizhe Zhang**, Guoyin Wang, Chunyuan Li, Zhe Gan, Chris Brockett, Bill Dolan. POINTER: Constrained Text Generation via Insertion-based Generative Pre-training. *EMNLP (2020)*
- Xiang Gao, **Yizhe Zhang**, Michel Galley, Chris Brockett and Bill Dolan. Dialogue Response Ranking Training with Large-Scale Human Feedback Data. *EMNLP (2020)*
- Chunyuan Li, Xiang Gao, Yuan Li, Xiujun Li, Baolin Peng, **Yizhe Zhang**, Jianfeng Gao. Optimus: Organizing Sentences via Pre-trained Modeling of a Latent Space. *EMNLP (2020)*
- Jianqiao Li, Chunyuan Li, Guoyin Wang, Hao Fu, Yuhchen Lin, Liqun Chen, **Yizhe Zhang** and Lawrence Carin. Improving Text Generation with Student-Forcing Optimal Transport. *EMNLP (2020)*
- Yu Cheng, Zhe Gan, **Yizhe Zhang**, Oussama Elachqar, Dianqi Li, Jingjing Liu. Contextual Text Style Transfer. *Findings of EMNLP (2020)*
- Shuyang Dai, Yu Cheng, **Yizhe Zhang**, Zhe Gan, Jingjing Liu and Lawrence Carin. Contrastively Smoothed Class Alignment for Unsupervised Domain Adaptation. *ACCV (2020)*

- Xinnuo Xu, **Yizhe Zhang**, Lars Liden, Sungjin Lee. Datasets and Benchmarks for Task-Oriented Log Dialogue Ranking Task. *Interspeech (2020)*

- Siyang Yuan, Ke Bai, Liqun Chen, **Yizhe Zhang**, Chenyang Tao, Chunyuan Li, Guoyin Wang, Ricardo Henao, Lawrence Carin. Weakly supervised cross-domain alignment with optimal transport Task. *BMVC (2020)*
- **Yizhe Zhang**, Siqi Sun, Michel Galley, Yen-Chun Chen, Chris Brockett, Xiang Gao, Jianfeng Gao, Jingjing Liu, Bill Dolan. DialoGPT: Large-Scale Generative Pre-training for Conversational Response Generation. *demo track, ACL (2020)*
- Yichen Huang*, **Yizhe Zhang***, Oussama Elachqar, Yu Cheng. INSET: Sentence Infilling with Inter-sentential Generative Pre-training. *ACL (2020)*
- Pengyu Cheng, Renqiang Min, Dinghan Shen, Christopher Malon, **Yizhe Zhang**, Yitong Li and Lawrence Carin. Improving Disentangled Text Representation Learning with Information Theoretical Guidance. *ACL (2020)*
- Xinjie Fan, **Yizhe Zhang**, Zhendong Wang, Mingyuan Zhou. Adaptive Correlated Monte Carlo for Contextual Categorical Sequence Generation. *ICLR (2020)*
- Yuan Li, Chunyuan Li, **Yizhe Zhang**, Xiujun Li, Guoqing Zheng, Lawrence Carin, Jianfeng Gao. Complementary Auxiliary Classifiers for Label-Conditional Text Generation. *AAAI (2020)*
- Liqun Chen, Ke Bai, Chenyang Tao, **Yizhe Zhang**, Guoyin Wang, Wenlin Wang, Ricardo Henao, Lawrence Carin. Sequence Generation with Optimal-Transport-Enhanced Reinforcement Learning. *AAAI (2020)*
- Xiang Gao, **Yizhe Zhang**, Sungjin Lee, Michel Galley, Chris Brockett, Jianfeng Gao and Bill Dolan. Structuring latent spaces for stylized response generation. *EMNLP (2019)*
- Dianqi Li, **Yizhe Zhang**, Zhe Gan, Yu Cheng, Chris Brockett, Ming-Ting Sun and Bill Dolan. Domain Adaptive Text Style Transfer. *EMNLP (2019)*
- Xinnuo Xu, **Yizhe Zhang**, Lars Liden and Sungjin Lee. Unsupervised Dialogue Spectrum Generation for Log Dialogue Ranking. *SIGDIAL (2019), Best paper nomination*
- Liqun Chen, Guoyin Wang, Chenyang Tao, Dinghan Shen, **Yizhe Zhang** and Lawrence Carin. Improving Textual Network Embedding with Global Attention via Optimal Transport. *ACL (2019)*
- Dinghan Shen, Asli Celikyilmaz, **Yizhe Zhang**, Liqun Chen, Xin Wang, Jianfeng Gao, Lawrence Carin. Towards Generating Long and Coherent Text with Multi-Level Latent Variable Models. *ACL (2019)*
- Xiang Gao, Sungjin Lee, **Yizhe Zhang**, Chris Brockett, Michel Galley, Jianfeng Gao, Bill Dolan. Jointly Optimizing Diversity and Relevance in Neural Response Generation. *NAACL (2019)*
- Liqun Chen, **Yizhe Zhang**, Ruiyi Zhang, Chenyang Tao, Zhe Gan, Haichao Zhang, Bai Li, Dinghan Shen, Changyou Chen, Lawrence Carin. Improving Sequence-to-Sequence Learning via Optimal Transport. *ICLR (2019)*
- **Yizhe Zhang**, Michel Galley, Jianfeng Gao, Zhe Gan, Xiujun Li, Chris Brockett, Bill Dolan. Generating Informative and Diverse Conversational Responses via Adversarial Information Maximization. *NeurIPS (2018)*
- Liqun Chen, Shuyang Dai, Chenyang Tao, Dinghan Shen, Zhe Gan, Haichao Zhang, **Yizhe Zhang**, Lawrence Carin. Adversarial Text Generation via Feature-Mover's Distance. *NeurIPS (2018)*
- Yunchen Pu, Shuyang Dai, **Yizhe Zhang**, Zhe Gan and Lawrence Carin. Multi-Domain Joint Distribution Learning with Generative Adversarial Nets. *ICML* (2018)
- Dinghan Shen, Guoyin Wang, Wenlin Wang, Martin Renqiang Min, Qinliang Su, **Yizhe Zhang**, Chunyuan Li, Ricardo Henao and Lawrence Carin. On Simple Word-Embedding-Based Models and Associated Pooling Mechanisms. *ACL* (2018)
- Guoyin Wang, Chunyuan Li, Wenlin Wang, **Yizhe Zhang**, Dinghan Shen, Xinyuan Zhang, Ricardo Henao and Lawrence Carin. Joint Embedding of Words and Labels for Text Classification. *ACL* (2018)
- Dinghan Shen, **Yizhe Zhang**, Ricardo Henao, Qinliang Su, Lawrence Carin. Deconvolutional Latent-Variable Model for Text Sequence Matching**.** *AAAI* **(**2018).
- Wenlin Wang, Piyush Rai, Yunchen Pu, Kai Fan, **Yizhe Zhang**, Ricardo Henao, Lawrence Carin. A Flexible Probabilistic Framework for Learning to Predict Unseen Classes. *AAAI* **(**2018).

- Zhe Gan, Liqun Chen, Weiyao Wang, Yunchen Pu, **Yizhe Zhang**, Lawrence Carin. Triangle Generative Adversarial Networks. *NIPS* (2017).
- **Yizhe Zhang,** Changyou Chen, Zhe Gan, Lawrence Carin. Stochastic Gradient Monomial Gamma Sampler. *ICML* (2017).
- **Yizhe Zhang,** Zhe Gan, Zhi Chen, Lawrence Carin. Adversarial Feature Matching for Text Generation. *ICML* (2017).
- **Yizhe Zhang,** Xiangyu Wang, Changyou Chen, Lawrence Carin. Towards Unifying Hamiltonian Monte Carlo and Slice Sampling. *NIPS* (2016).
- Changyou Chen, Nan Ding, Chunyuan Li, **Yizhe Zhang**, Lawrence Carin. Distributed Bayesian Learning with Stochastic Gradient MCMC. *NIPS* (2016).
- **Yizhe Zhang**, Ricardo Henao, Lawrence Carin. Dynamic Poisson Factor Analysis. *ICDM (2016).*
- Kai Fan, **Yizhe Zhang**, Katherine Heller. Triply Stochastic Variational Inference for Non-linear Beta Process Factor Analysis. *ICDM (2016).*
- **Yizhe Zhang**, Ricardo Henao, Jianling Zhong, Lawrence Carin, Alexander Hartemink. Learning a Hybrid Architecture for Sequence Regression and Annotation. *AAAI (2016).*
- **Yizhe Zhang**, Ricardo Henao, Chunyuan Li, Lawrence Carin. Bayesian Dictionary Learning with Gaussian Processes and Sigmoid Belief Networks. *IJCAI (2016).*
- **Yizhe Zhang**, Changyou Chen, Ricardo Henao, Lawrence Carin. Laplacian Hamiltonian Monte Carlo. *ECML (2016).*
- **Yizhe Zhang**, Yupeng He and Chaochun Wei (2015). MOST+: a Motif Finding Approach Combining Genomic Sequence and Heterogeneous Genome-wide Signatures. *BMC Genomics.*
- Yupeng He, **Yizhe Zhang**, Guangyong Zheng and Chaochun Wei (2012). CRF-based Transcription Factor Binding Site Finding System. *BMC Genomics.*
- Jiemeng Liu, Haifeng Wang, Hongxing Yang, **Yizhe Zhang**, Jinfeng Wang, Fangqing Zhao and Ji Qi. (2012). Composition-based Classification of Short Metagenomic Sequences Elucidates the Landscapes of Taxonomic and Functional Enrichment of Microorganisms. *Nucleic Acids Research.*

Workshop

- Woon Sang Cho, **Yizhe Zhang**, Sudha Rao, Chris Brockett and Sungjin Lee. Generating a Common Question from Multiple Documents using Multi-source Encoder-Decoder Models. *WNGT, EMNLP (2019)*
- Woon Sang Cho, Pengchuan Zhang, **Yizhe Zhang**, Xiujun Li, Michel Galley, Chris Brockett, Mengdi Wang, Jianfeng Gao. Towards coherent and cohesive long-form text generation. *Workshop on Narrative Understanding, NAACL (2019)*
- **Yizhe Zhang**, Zhe Gan and Lawrence Carin. Generating Text with Adversarial Training. *Workshop on Adversarial Training*, *NIPS* (2016).
- **Yizhe Zhang**, Lawrence Carin. Learning Dictionary with Spatial and Inter-dictionary Dependency. *Workshop on representation learning, NIPS* (2015)*.*

Preprint

- **Yizhe Zhang**, Xiang Gao, Sungjin Lee, Chris Brockett, Michel Galley, Jianfeng Gao, Bill Dolan. Consistent Dialogue Generation with Self-supervised Feature Learning.
- Woon Sang Cho, **Yizhe Zhang**, Sudha Rao, Asli Celikyilmaz, Chenyan Xiong, Jianfeng Gao, Mengdi Wang, Bill Dolan. Unsupervised Common Question Generation from Multiple Documents using Reinforced Contrastive Coordinator.
- Zeqiu Wu, Michel Galley, Chris Brockett, **Yizhe Zhang**, Xiang Gao, Chris Quirk, Rik Koncel-Kedziorski, Jianfeng Gao, Hannaneh Hajishirzi, Mari Ostendorf, Bill Dolan. A Controllable Model of Grounded Response Generation.

Teaching

- Advanced Machine Learning @Duke (STA571). Instructor: *Katherine Heller*
- Probabilistic Machine Learning @Duke (CS571). Instructor: *Cynthia Rudin*

Rewards

- Department Fellowship (2008-2011)
- National Excellent Graduate Scholarship (top 1%) (2012)
- Travel award: NIPS (2015, 2016), ICML (2017), ICDM (2016), IJCAI (2016), AAAI (2016)

Professional Services

Senior Program committee: AAAI (2019-2020)

Program committee: NeurIPS, ICML, ICLR, AAAI, IJCAI, ACL, EMNLP, NAACL, CoNLL, SIAM

Organization committee: ACL 2020

Proficiency

- Pytorch, Theano, Tensorflow, C/C++, Python, Java, Lua, MATLAB and R.