

XIANGYU (BECKY) PENG

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Research area: Natural Language Generation, Reinforcement Learning,
Knowledge Graph, Game AI, Deep Learning

EDUCATION

Georgia Institute of Technology , Atlanta, Georgia *Aug 2019 - present*

PhD in Machine Learning, GPA: 4.00/4.00, Advisor: Dr. Mark O. Riedl

Relevant Coursework: Reinforcement Learning; Stochastic Process; Math foundation of Machine Learning;
Non-linear Optimization; Advanced Algorithm; Natural Language Processing; Theoretical Statistics

Stanford University , Stanford, California *Sep 2017 - Jun 2019*

M.S. in Structure Engineering, GPA: 4.00/4.30, Advisor: Dr. Jack Baker

Relevant Coursework: Deep Learning; Convolutional Neural Networks for Visual Recognition; Machine
Learning; Data Mining and Analysis; Mining Massive Data Sets

Shanghai Jiaotong University , Shanghai, China *Sep 2013 - Jun 2017*

B.S. in Civil Engineering, GPA: 3.95/4.00, Advisor: Dr. Lulu Zhang

Relevant Coursework: Data structure; Programming Abstractions in C++

WORK EXPERIENCE

Research Scientist Intern May 2022 - Nov 2022
Salesforce Research *Palo Alto, CA*

- Proposing a sample-specific ensemble of source models (SESoM) for **few-shot prompt-tuning**, which properly **transfers knowledge** from **trained soft prompts of source task** in large language models
- SESoM learns from the few-shot target samples to adaptively decide how much each source task should contribute given different target samples by calculating attentions between samples and prompts

PhD Data Scientist Intern May 2021 - Aug 2021
Einstein team, Salesforce *Boston, MA*

- Proposing an effective architecture, Extract-Boost-Finetune (XFBoost), for **improving automatic product description generation**
- Extracting product attributes from product images and boosting the probability of tokens with high similarity with extracted features
- Multimodal language model is fine-tuned with reinforcement learning to generate higher-quality descriptions

Data Scientist Intern Jun 2018 - Sep 2018
SunPower Corp. *San Jose, California*

- Exploring feature extraction of 1-second hot-spot cell test by conducting correlation analysis
- Finding effective data representations and evaluation metrics for training neural networks of **predicting hot-spot max temperature**

PUBLICATIONS

[11] **Story Shaping: Teaching Agents Human-like Behavior with Stories**

Xiangyu Peng, Christopher Cui, Wei Zhou, Renee Jia, Mark Riedl

Under Review

[10] **Neuro-Symbolic World Models for Adapting to Open World Novelty**

Jonathan Balloch, Zhiyu Lin, Robert Wright, Xiangyu Peng, Mustafa Hussain, Aarun Srinivas, Julia Kim, Mark O. Riedl

Under Review

[9] **Model ensemble instead of prompt fusion: a sample-specific knowledge transfer method for few-shot prompt tuning**

Xiangyu Peng, Chen Xing, Prafulla Kumar Choubey, Chien-Sheng Wu, Caiming Xiong

Proceedings of the 11th International Conference on Learning Representations (ICLR-23)

[8] **Inherently Explainable Reinforcement Learning in Natural Language**

Xiangyu Peng, Mark Riedl, Prithviraj Ammanabrolu

Proceedings of the 36th Conference on Neural Information Processing Systems (NeurIPS-22)

[7] **Guiding Neural Story Generation with Reader Models**

Xiangyu Peng, Kaige Xie, Amal Alabdulkarim, Harshith Kayam, Samihan Dani and Mark Riedl

Findings of the Association for Computational Linguistics: EMNLP 2022

[6] **Inferring the Reader: Guiding Automated Story Generation with Commonsense Reasoning**

Xiangyu Peng, Siyan Li, Sarah Wiegrefe and Mark Riedl

Findings of the Association for Computational Linguistics: EMNLP 2022

[5] **NovGrid: A Flexible Grid World for Evaluating Agent Response to Novelty.**

Jonathan Balloch, Zhiyu Lin, Mustafa Hussain, Aarun Srinivas, Robert Wright, Xiangyu Peng, Julia Kim, and Mark Riedl.

AAAI 2022 Spring Symposium on Designing Artificial Intelligence for Open Worlds.

[4] **XFBoost: Improving Text Generation with Controllable Decoders**

Xiangyu Peng and Michael Sollami

Under Review.

[3] **Detecting and Adapting to Novelty in Games**

Xiangyu Peng, Jonathan Balloch and Mark Riedl

Creativity and Robotics at ICSR 2020||Reinforcement Learning in Games workshop at AAAI 2021

[2] **Automatic Story Generation: Challenges and Attempts**

Amal Alabdulkarim, Siyan Li and Xiangyu Peng

The 3rd Workshop On Narrative Understanding in NAACL-21

[1] **Reducing Non-Normative Text Generation from Language Models**

Xiangyu Peng, Siyan Li, Spencer Frazier and Mark Riedl

Oral. Proceedings of the 13th International Conference on Natural Language Generation (INLG-20)

SKILLS

Technical: Natural Language Processing, Reinforcement Learning, Machine Learning, Knowledge Graphs, Predictive Analytics, Computer Vision

Programming: C/C++, Python, R, SQL, MATLAB, Julia

Tools and Framework: pyTorch, Tensorflow, Git, scikit-learn, Numpy, Pandas, nltk, AWS