XIANGYU (BECKY) PENG

xpeng62@gatech.edu ◇ xiangyu-peng.github.io ◇ LinkedIn ◇ Google Scholar

Research area: Large Language Models (LLMs), Game AI, Reinforcement Learning (RL), Knowledge Graph, Natural Language Generation (NLP/NLG), Deep Learning

EDUCATION

Georgia Institute of Technology, Atlanta, GA, US — *Aug 2019 - Present*
Ph.D. Candidate in Machine Learning, GPA: 4.00/4.00, Advisor: Dr. Mark O. Riedl

Stanford University, Stanford, CA, US — *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

MOST RECENT WORK EXPERIENCE

Research Scientist Intern — *May 2023 - July 2023*
*NLP Group, **Microsoft Research**, mentor: Sudha Rao, Bill Dolan* — *Redmond, WA*

- Constructing a **GPT-4** simulated **multi-NPC** text adventure game framework, which shows how to control GPT-4 simulated games with a fixed game agent, such as TextWorld.
- Proposing a novel architecture to apply GPT-4 on **Game user experience** analysis and improvement

Research Scientist Intern — *May 2022 - Nov 2022*
*Interactive AI Team, **Salesforce Research**, mentor: Chen Xing, Prafulla Choubey* — *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 pre-trained prompts

Data Scientist Intern — *May 2021 - Aug 2021*
*Commerce Cloud team, **Salesforce**, mentor: Michael Sollami, Keld Lundgaard* — *Boston, MA*

- Proposing an effective architecture, Extract-Boost-Finetune (XFBoost), for **improving the quality of product description generation** of **multi-modal large language models**
- Enhancing product description generation by extracting attributes from product images and increasing the likelihood of tokens matching extracted features
- Fine-tuning product description **multi-modal model** with reinforcement learning using a secondary language model trained on **human preferences** as the reward model to improve description quality

PUBLICATIONS

[11] Story Shaping: Teaching Agents Human-like Behavior with Stories — **AIIDE-23**
Xiangyu Peng, Christopher Cui, Wei Zhou, Renee Jia, Mark Riedl
Proceedings of the 19th AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment

[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 **ICLR-23**
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 **NeurIPS-22**
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 **EMNLP-22**
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 Wiegreffe and Mark Riedl **EMNLP-22**
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
Salesforce com Inc, 2023. U.S. Patent Application 17/509,024.

[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 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 **INLG-20**
Xiangyu Peng, Siyan Li, Spencer Frazier and Mark Riedl
Oral. *Proceedings of the 13th International Conference on Natural Language Generation*

SKILLS

Technical: Natural Language Processing, Large Language Model, Prompt Tuning/Engineering, Reinforcement Learning, Game AI, Explainable AI, Machine Learning, Computer Vision

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

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