Tianze LUO

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Research Interest

Graph Representation Learning: Graph Neural Networks; Graph Signal Processing; Graph Generation; Graph-based Recommender Systems.
Foundation Models: Diffusion Models; LLMs; Foundation Models for Graph-Structural Data.

Education

Nanyang Technological University (NTU) Jan 2020 - Present
Ph.D. Candidate in Computer Science, with Alibaba-NTU-IPP programme
Supervisor: Prof. Sinno Jialin Pan
Thesis: "Improving Representation Learning on Graph-Structural Data for Classifications, Generations and Recommendations"

Nanyang Technological University (NTU) Aug 2017 - Dec 2019
Master of Engineering in Computer Science (part-time)
Supervisor: Prof. Ah-Hwee Tan
Thesis: "Autonomous Multi-agent Collaborative Environment Exploration"

Nanyang Technological University (NTU) Aug 2013 - Aug 2017
*B.Eng. in Electrical and Electronic Engineering (**First Class Honours**)*

Université de Technologie de Troyes, France (UTT) Aug 2015 - Jan 2016
Exchange Programme

Working Experiences

Alibaba (Hangzhou, China & Singapore) Jan 2020 - Present
Alibaba-NTU-IPP Ph.D Programme

Developed recommender systems and algorithms for Ali-Express with transfer learning, to share the knowledge between the homepage and the item details page, and enhance the recommendation performance on both pages.

Developed re-ranking models for modeling mutual influence between items within and across channels, to improve the click-through rate on the homepage for Ali-Express.

Developed cross-country recommender systems for Lazada using graph-based recommendation models, to enhance the recommendation performance in the Southeast Asia market, and mitigate the data deficiency and cold start problem.

Applying for the patent "*An Adaptive Data Augmentation Method For Deep Graph Representation Learning*".

Applying for the patent "*A Fast Graph Generation Method Based On A Deep Diffusion Model*".

Alibaba (Hangzhou, China) Oct 2019 - Dec 2019
Algorithm Engineer
Developed recommender systems and algorithms for Ali-Express.

Nanyang Technological University (Singapore) Aug 2017 - Oct 2019
Project Officer
Built up real-time exploration and navigation methods for multi-robot systems.
Researched on reinforcement learning methods for multi-agent systems.

Rakuten (Tokyo, Japan) May 2016 - Jul 2016
Software Engineer Intern
Developed Android SDK for Rakuten E-money App "Edy", which supports online transactions and payments.

ST-Engineering (Singapore) May 2015 - Jul 2015
Intern
Developed a taxi navigation Android App and test a newly developed bus system.

Publications

1. **Tianze Luo**, Zhanfeng Mo, Sinno Jialin Pan. "Learning Adaptive Multiresolution Transforms via Meta-Framelet-based Graph Convolutional Network". Accepted by International Conference on Learning Representations (ICLR). (2024)
2. **Tianze Luo**, Zhanfeng Mo, Sinno Jialin Pan. "Fast Graph Generation via Spectral Diffusion". Accepted by IEEE Transactions on Pattern Analysis and Machine Intelligence (IEEE TPAMI) (2023). https://arxiv.org/abs/2211.08892
3. **Tianze Luo**, Zhanfeng Mo, Sinno Jialin Pan. "Conditional Graph Generation with Graph Principal Flow Network". International Conference on Machine Learning (ICML-23) Workshop on Structured Probabilistic Inference & Generative Modeling. (2023)
4. **Tianze Luo**, Yong Liu, Sinno Jialin Pan. "Collaborative Sequential Recommendations via Multi-view GNN-Transformers". Minor revision at ACM Transactions on Information Systems (ACM TOIS). (2023)
5. **Tianze Luo**, Qiuhao Zeng, Tianbo Li, Sinno Jialin Pan."Meta-Contrast for Graph Representation Learning". Major revision at IEEE Transactions on Pattern Analysis and Machine Intelligence (IEEE TPAMI). (2022)
6. Quanyu Long, **Tianze Luo**, Wenya Wang, Sinno Jialin Pan. "Domain Confused Contrastive Learning for Unsupervised Domain Adaptation". Proceedings of the North American Chapter of the Association for Computational Linguistics (NAACL-22). (2022)
7. Qiuhao Zeng, **Tianze Luo**, Boyu Wang. "Domain-Augmented Domain Adaptation". arXiv preprint. (2022)
8. **Tianze Luo**, Zichen Chen, Budhitama Subagdja, Ah-Hwee Tan. "Real-time Hierarchical Map Segmentation for Coordinating Multi-Robot Exploration". IEEE Access 11 (2022): 15680-15692.
9. Hao, Qi, **Tianze Luo**, and Guangda Huzhang. "Re-ranking with constraints on diversified exposures for homepage recommender system." arXiv preprint arXiv:2112.07621. (2021)
10. Tianbo Li*, **Tianze Luo*** (co-first author), Yiping Ke, Sinno Jialin Pan. "Mitigating Performance Saturation in Neural Marked Point Processes: Architectures and Loss Functions." Proceedings of the 27th ACM SIGKDD Conference on Knowledge Discovery & Data Mining. (2021)
11. **Tianze Luo**, Budhitama Subagdja, Di Wang, Ah-Hwee Tan. "Multi-agent collaborative exploration through graph-based deep reinforcement learning." 2019 IEEE International Conference on Agents (ICA-19). (2019)

Teaching Experiences

Singapore University of Social Sciences
Associate Lecturer Mar 2023 - Present
CET175 Introduction to Generative AI
MKT365 Social Media Metrics & Analytics

NTU School of Computer Science and Engineering
Teaching Assistant
CZ3005 Artificial Intelligence Jan 2022 - May 2022
SC1015 Introduction to Data Science & Artificial Intelligence Jan 2022 - May 2022
CZ3005 Artificial Intelligence Aug 2020 - Dec 2020

Honors & Awards

Best Paper Award "Multi-agent collaborative exploration through graph-based deep reinforcement learning." 2019 IEEE International Conference on Agents (ICA-19). IEEE (2019)

Complete 2014–2015 and 2015-2016 NTU Undergraduate Research on Campus (URECA) with **distinction**.

Senior Middle Two (SM2) Scholarship (2012-2017), Singapore Ministry of Education.

Open Source Projects

PandaLLM (Large Language Model for Chinese) with more than **1,000** stars. https://github.com/dandelionsllm/pandallm

Released Base Models (Pretrain and SFT): Panda-7B, Panda-Instruct-7B, Panda-13B, Panda-Instruct-13B, Flan-LLaMA-7B, Panda-OpenLLaMA-7B

Released Models for Chat (SFT): Panda-LLaMA-13B-Chat, Panda-LLaMA2-13B-Chat (v2)

Released Models for Legal Services (Pretrain and SFT): Legal-Panda-13B-Chat

Released Models for Code Generation (Pretrain and SFT): Code-Panda-13B-Python

Released Models for Information Retrieval: Panda-Index-large-zh, Panda-Index-large-en

Technical report: Jiao, Fangkai*, Bosheng Ding*, **Tianze Luo***, and Zhanfeng Mo*. "Panda LLM: Training Data and Evaluation for Open-Sourced Chinese Instruction-Following Large Language Models." arXiv preprint arXiv:2305.03025 (2023). https://arxiv.org/abs/2305.03025

Professional Services

Reviewer for Journals

IEEE Transactions on Automation Science and Engineering (T-ASE)
IEEE Transactions on Neural Networks and Learning Systems (TNNLS)

Reviewer for Conferences

International Joint Conference on Artificial Intelligence (IJCAI)
Association for the Advancement of Artificial Intelligence (AAAI)
International Conference on Machine Learning (ICML)
International Conference on Learning Representations (ICLR)
International World Wide Web Conference (WWW)