Liangchen Luo

Contact Information

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Research Interests

Large Language Models, Reasoning, Natural Language Processing, Learning Theory, Model Compression, Vision

Education

Peking University (PKU)
School of Earth and Space Science
B.Sc., in the Specialty of Geographical Information Science 2014 – 2019

Research Experience

Google DeepMind
Research Engineer May 2024 – Present
Gemini core contributor (post-training workflow).
LLM general reasoning capabilities in math, science, coding and planning.

Google

- **NLP, Cerebra, Research**
  Research Engineer Mar 2023 – May 2024
  LLM mathematical reasoning; alignment and post-training; open-ended text generation and self-critique.
- **Vertex AI Search, Cloud AI**
  Software Engineer Sep 2021 – Mar 2023
  TPU infrastructure, model training and quality.
- **Mobile Models, Cerebra, Research**
  AI Resident, advised by Andrew Howard and Mark Sandler Oct 2019 – Jun 2021
  Large-scale model compression.

Publications

15. Towards an On-Device Agent for Text Rewriting.
    Yun Zhu, Yinxiao Liu, Felix Stahlberg, Shankar Kumar, Yu-hui Chen, **Liangchen Luo**, Lei Shu, Renjie Liu, Jindong Chen, Lei Meng.
    In *Proceedings of the 2024 Annual Conference of the North American Chapter of the Association for Computational Linguistics - Human Language Technologies (NAACL-HLT)*. 2024.
14. RewriteLM: An Instruction-Tuned Large Language Model for Text Rewriting.
    Lei Shu, **Liangchen Luo**, Jayakumar Hoskere, Yun Zhu, Canoee Liu, Simon Tong, Jindong Chen, Lei Meng.
    In *Proceedings of the 38th AAAI Conference on Artificial Intelligence (AAAI)*. 2024.
13. Adaptive Gradient Methods with Dynamic Bound of Learning Rate.
    Liangchen Luo*, Yuanhao Xiong*, Yan Liu, Xu Sun.
    In *Proceedings of the 7th International Conference on Learning Representations (ICLR)*. 2019.
12. Learning Personalized End-to-End Goal-Oriented Dialog.
    Liangchen Luo, Wenhao Huang, Qi Zeng, Zaiqing Nie, Xu Sun.
    In *Proceedings of the 33rd AAAI Conference on Artificial Intelligence (AAAI)*. 2019.
11. Text Assisted Insight Ranking Using Context-Aware Memory Network.
    Qi Zeng*, **Liangchen Luo***, Wenhao Huang, Yang Tang.
    In *Proceedings of the 33rd AAAI Conference on Artificial Intelligence (AAAI)*. 2019.

10. An Auto-Encoder Matching Model for Learning Utterance-Level Semantic Dependency in Dialogue Generation.
Liangchen Luo*, Jingjing Xu*, Junyang Lin, Qi Zeng, Xu Sun.
In *Proceedings of the 2018 Conference on Empirical Methods in Natural Language Processing (EMNLP)*. 2018.

Manuscripts

9. Improve Mathematical Reasoning in Language Models by Automated Process Supervision.
Liangchen Luo*, Yinxiao Liu*, Rosanne Liu, Samrat Phatale, Harsh Lara, Yunxuan Li, Lei Shu, Yun Zhu, Lei Meng, Jiao Sun, Abhinav Rastogi.
arXiv preprint arXiv:2406.06592. 2024.

8. Multi-Step Problem Solving Through a Verifier: An Empirical Analysis on Model-Induced Process Supervision.
Zihan Wang, Yunxuan Li, Yuexin Wu, **Liangchen Luo**, Le Hou, Hongkun Yu, Jingbo Shang.
arXiv preprint arXiv:2402.02658. 2024.

7. Fusion-Eval: Integrating Evaluators with LLMs.
Lei Shu, Nevan Wichers, **Liangchen Luo**, Yun Zhu, Yinxiao Liu, Jindong Chen, Lei Meng.
arXiv preprint arXiv:2311.09204. 2023.

6. SiRA: Sparse Mixture of Low Rank Adaptation.
Yun Zhu, Nevan Wichers, Chu-Cheng Lin, Xinyi Wang, Tianlong Chen, Lei Shu, Han Lu, Canoee Liu, **Liangchen Luo**, Jindong Chen, Lei Meng.
arXiv preprint arXiv:2311.09179. 2023.

5. Critique Ability of Large Language Models.
Liangchen Luo, Zi Lin, Yinxiao Liu, Lei Shu, Yun Zhu, Jingbo Shang, Lei Meng.
arXiv preprint arXiv:2310.04815. 2023.

4. Bridging the Gap Between Object Detection and User Intent via Query-Modulation.
Marco Fornoni, Chaochao Yan, **Liangchen Luo**, Kimberly Wilber, Alex Stark, Yin Cui, Boqing Gong, Andrew Howard.
arXiv preprint arXiv:2106.10258. 2021.

3. Large-Scale Generative Data-Free Distillation.
Liangchen Luo, Mark Sandler, Zi Lin, Andrey Zhmoginov, Andrew Howard.
arXiv preprint arXiv:2012.05578. 2020.

2. Image Segmentation via Cellular Automata.
Mark Sandler, Andrey Zhmoginov, **Liangchen Luo**, Alexander Mordvintsev, Ettore Randazzo, Blaise Agúera y Arcas.
arXiv preprint arXiv:2008.04965. 2020.

1. MUSE: Parallel Multi-Scale Attention for Sequence to Sequence Learning.
Guangxiang Zhao, Xu Sun, Jingjing Xu, Zhiyuan Zhang, **Liangchen Luo**.
arXiv preprint arXiv:1911.09483. 2019.

Professional Service

- Program committee member, the AAAI Conference on Artificial Intelligence (AAAI). 2020.
- Program committee member, the Annual Meeting of the Association for Computational Linguistics (ACL). 2019.
- Program committee member, the Conference on Language Modeling (COLM). 2024.
- Program committee member, the Conference on Empirical Methods in Natural Language Processing (EMNLP). 2019.
- Program committee member, the International Conference on Learning Representations (ICLR). 2021, 2024.

- Program committee member, the International Conference on Machine Learning (ICML). 2023, 2024.
- Program committee member, the Conference on Neural Information Processing Systems (NeurIPS). 2023, 2024.