

MAN LUO

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EDUCATION

Ph.D. student, Computer Science

August 2018 - May 2023

Arizona State University (ASU), Tempe, Arizona, USA

Thesis: Neural Retriever-Reader for Information Retrieval and Question Answering

Chair: Dr. Chitta Baral

Committee: Dr. Yezhou Yang, Dr. Eduardo Blanco, Dr. Danqi Chen

Bachelor of Science, Computer Science

September 2014 - July 2018

Beijing Forestry University, Beijing, China

RESEARCH AREA

Language Models and Multimodal language Models, with a special interest in multimodal information retrieval, question answering, and biomedical or clinical applications.

WORK EXPERIENCE

Research Fellow at Mayo Clinic

July 2023 - Present

Conduct front-end research on developing language models and multimodal language models that can generalize to unseen domains and increase the interpretability of models.

Research Intern at Google Research

Sep 2022 - Dec 2022

Utilized information retrieval models to enhance the few-shot in-context learning capabilities of large language models. Designed a retrieval model that achieved superior performance compared to existing models.

Research Intern at Meta Reality Lab

May 2022 - Aug 2022

Developed an indexing-memory efficient hybrid retrieval model that improved generalization. Utilized adversarial attack methods to evaluate the robustness of various retrieval models.

Research Intern at Salesforce.Inc

May 2021 - Aug 2021

Examined machine reading comprehension models, and evaluated the benefits and drawbacks of extractive and generative models through experimentation on 12 question answering datasets in both in-domain and out-of-domain scenarios.

TEACHING/MENTORING

Teaching Assistant

CSE259 Logic in Computer Science

Dec 2020 - Dec 2021

CSE579 Knowledge Representation and Reasoning

Aug 2019 - Dec 2019

Master Mentor

Shrinidhi Kumbhar (Master Student at ASU).

Jan 2023-Sep 2023

Srija Macherla (SWE at Amazon).

Jan 2022 - Jun 2022

Yankai Zeng (Ph.D student at The University of Texas at Dallas).

Aug 2020 - June 2021

Course Project Mentor

CSE576 Natural Language Processing

Domain Oriented Question Generation, 26 students,

Aug 2021 - Dec 2021

Differential Diagnosis Dialogue Generation, 20 students,

Aug 2021 - Dec 2021

Semantic Information Availability (SIA) Task, 5 students,

Jun 2020 - May 2020

Question Answering with Varied Types of Reasoning, 5 students.

Jun 2020 - May 2020

ACADEMIC SERVICE

Guest Editor, PLOS Digital Medicine.

Organizer, O-DRUM: Workshop on Open-Domain Reasoning under Multi-Modal Settings CVPR 2023.

Organizer, O-DRUM: Workshop on Open-Domain Retrieval under Multi-Modal Settings CVPR 2022.

Reviewers, ACL, NAACL, EMNLP, EACL, AAAI, NIPS, IROS.

AWARD

Finalist of 2021 Knowledge Mobilization Awards. [Website](#)

April 2021

2019 ICLP conference Doctoral Consortium Travel Award. [Website](#)

September 2019

Honorable Mention in Interdisciplinary Contest in Modeling(ICM)

April 2017

INVITED TALK

“The Trend of Transformer-based Multimodal in Radiology” at RSNA

Nov 2023

“Visual-Retriever-Reader for Knowledge-based Question Answering” at SERUM WACV

Jan 2023

“Semantic Searching in Biomedical Domain” at exploreCSR workshop (ASU).

Mar 2021

PUBLICATION

- **Luo, M.**, Tariq, A., Patel, B., Banerjee, I. Transformer-based Multimodal Generative Model: Use-case of Screening Mammogram Reading. RSNA 2023.
- **Luo, M.** Fang, Z. Gokhale, T. Baral, C. [End-to-end Knowledge Retrieval with Multi-modal Queries](#). ACL 2023.
- **Luo, M.**, Jain, S., Gupta, A., Einolghozati, A., Oguz, B., Chatterjee, D., Chen, X., Baral, C. and Heidari, P., 2022. [A Study on the Efficiency and Generalization of Light Hybrid Retrievers](#). ACL 2023.
- Parmar, M., Mishra, S., Purohit, M., **Luo, M.**, Baral, C. [In-BoXBART: Get Instructions into Biomedical Multi-Task Learning](#). NAACL 2022 Findings.
- Gokhale, T., Mishra, S., **Luo, M.**, Sachdeva, B., Baral, C. [Generalized but not Robust? Comparing the Effects of Data Modification Methods on Out-of-Domain Generalization and Adversarial Robustness](#). ACL 2022 Findings.
- **Luo, M.**, Mitra, A., Gokhale, T., Baral, C. [Improving Biomedical Information Retrieval with Neural Retrievers](#). AAAI 2022.
- **Luo, M.**, Zeng, Y., Banerjee, P., Baral, C. [Weakly-Supervised Visual-Retriever-Reader for Knowledge-based Question Answering](#). EMNLP 2021.
- **Luo, M.** Sampat, S. Tallam, R. Zeng, Y. Vancha, M. Sajja, A. Baral, C. [Just because you are right, doesnt mean I am wrong: Overcoming a bottleneck in development and evaluation of Open-Ended VQA tasks](#). EACL 2021.
- Lee, J. and **Luo, M.**, 2019. [Strong equivalence for LPMLN programs](#). ICLP 2019.
- Varshney, N., **Luo, M.**, Baral, C. [Can Open-Domain QA Reader Utilize External Knowledge Efficiently like Humans?](#) AAAI 2023 Workshop on Knowledge Augmented Methods for NLP
- **Luo, M.**, Parmar, M., Mahendran, J. S., Jain, S., Rawal, S., Baral, C. [SCONER: Scoring Negative Candidates Before Training Neural Re-Ranker For Question Answering](#) ICML 2022 Workshop on Knowledge Retrieval and Language Models.
- **Luo, M.**, Saxena, S., Mishra, S., Parmar, M., Baral, C. [BioTABQA: Instruction Learning for Biomedical Table Question Answering](#) CEUR Workshop 2022.
- **Luo, M.** [Neural Retriever and Go Beyond: A Thesis Proposal](#). NAACL 2022 Student Research Workshop.
- **Luo, M.**, Chen, S., Baral, C [A Simple Approach to Jointly Rank Passages and Select Relevant Sentences in the OBQA Context](#) NAACL 2022 Student Research Workshop.

- **Luo, M.**, Hashimoto, K., Yavuz, S., Liu, Z., Baral, C., Zhou, Y. [Choose Your QA Model Wisely: A Systematic Study of Generative and Extractive Readers for Question Answering](#) ACL 2022 Spa-NLP workshop.

PRE-PRINT

- Chiang, C. C., **Luo, M.**, Dumkrieger, G., Trivedi, S., Chen, Y. C., Chao, C. J., ... & Banerjee, I. [A Large Language Model-Based Generative Natural Language Processing Framework Finetuned on Clinical Notes Accurately Extracts Headache Frequency from Electronic Health Records](#) medRxiv preprint 2023.
- **Luo, M.**, Kumbhar, S., Parmar, M., Varshney, N., Banerjee, P., Aditya, S., Baral, C. [Towards LogiGLUE: A Brief Survey and A Benchmark for Analyzing Logical Reasoning Capabilities of Language Models](#). arXiv preprint 2023.
- Macherla, S., **Luo, M.**, Parmar, M., Baral, C. [MDDial: A Multi-turn Differential Diagnosis Dialogue Dataset with Reliability Evaluation](#). arXiv preprint 2023.
- **Luo, M.** [Neural Retriever-Reader for Information Retrieval and Question Answering](#) (Doctoral dissertation, Arizona State University, 2023).
- **Luo, M.**, Xu, X., Dai, Z., Pasupat, P., Kazemi, M., Baral, C., ... Zhao, V. Y. [Dr. ICL: Demonstration-Retrieved In-context Learning](#). arXiv preprint 2023.
- Varshney, N., Parmar, M., Patel, N., Handa, D., Sarkar, S., **Luo, M.**, Baral, C.. [Can NLP Models Correctly Reason Over Contexts that Break the Common Assumptions?](#). arXiv preprint 2023.
- Liu, Z., Chen, Y., Li, J., **Luo, M.**, Yu, P. S., Xiong, C. [Improving contrastive learning with model augmentation](#). arXiv preprint 2022.
- Banerjee, P., Baral, C., **Luo, M.**, Mitra, A., Pal, K., Son, T. C., Varshney, N. [Can Transformers Reason About Effects of Actions?](#) arXiv preprint, 2020.

BOOK MANUSCRIPT

Advances in Multi-Modal Information Retrieval (In Preparation)

Springer