Qinyu Luo

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EDUCATION

Johns Hopkins University, M.S. in Computer Science & Engineering Management | USA **2024.09 - Present**

- Major GPA: N/A (in progress)
- Key Courses: *Artificial Agents, Information Retrival and WebAgents, Natural Language Processing*

Hohai University, Department of Computer Science and Information | China **2019.09 - 2023.06**

- Major GPA: 3.86
- Key Courses: *Artificial Intelligence, Operating Systems, Data Structures, Algorithm Design, Database Systems*

PUBLICATIONS

- **Q. Luo**, Y. Ye, S. Liang, et al. "RepoAgent: An LLM-Powered Open-Source Framework for Repository-Level Code Documentation Generation." EMNLP, 2024
- C. Qian, P. Han, **Q. Luo**, et al. "EscapeBench: Pushing Language Models to Think Outside the Box." arXiv preprint arXiv:2412.13549. 2024.
- R. Tian, Y. Li, Y. Fu, S. Deng, **Q. Luo**, et al. "Distance Between Relevant Information Pieces Causes Bias in Long-Context LLMs." arXiv preprint arXiv:2410.14641. 2024.
- Y. Lu, S. Yang, C. Qian, G. Chen, **Q. Luo**, et al. "Proactive Agent: Shifting LLM Agents from Reactive Responses to Active Assistance." ICLR, 2025

RESEARCH PROJECTS

Research Interest: LLM-driven Agents; Multi-Agent System; Agentic Tool Learning; Multimodality Reasoning

Member of JHU-CLSP | Johns Hopkins University | advised by Prof. Kevin Duh / Jason Eisner

- **OpenMMO1:** Mastering Reasoning in Multimodality through Verifiable Reinforcement Learning **Ongoing**

Led the design of the entire project architecture and experiments, and constructed 28k high-quality Long-COT data through reverse engineering, covering multi-modal scenarios such as map detective, movie detective, and game image reasoning; Trained a basic reasoning model and performed bootstrap training on the first 30% of the dataset in terms of difficulty; Constructing a verifiable output format for offline RL training, improving the accuracy rate from 18% to 88%.

- **DeepReport:** Boosting Reasoning LLMs for Long Report Generation with Iterative Critical Thinking **Ongoing**

Constructed an adversarial generation framework using Wikipedia pages as ground truth to train the critic model, which provides high-value constructive feedback in the reports; Introduced a self-annotation module enabling LLMs to iteratively engage in thinking, tool invocation, reflective reasoning, and report generation. Designed ReportBench, a dynamic and progressive evaluation benchmark based on factual QAs.

Member of THUNLP | Tsinghua University | advised by Prof. Zhiyuan Liu

- **RepoAgent:** LLM-Powered Framework for Repository-level Documentation Generation **2023**

Led development of LLM-powered framework automating code documentation generation/maintenance, achieving human-intervention-free updates during collaborative coding; Engineered bidirectional reference detection algorithm for global structural analysis, improving document accuracy and cross-file context awareness to SOTA; Conducted multi-dimensional evaluations across GPT-4/3.5 and Llama models, resulting in a better performance than human docs (accepted by EMNLP 2024).

- **XAgent:** Dual-Loop Autonomous LLM-driven AI Agent for complex real-world tasks **2023**

Developed an autonomous agent with a dual-loop mechanism for automatically solving various complex tasks; the outer loop handles high-level task management and planning, while the inner loop is responsible for low-level task execution. Beat GPT-4 series models and AutoGPT on various math, code, and QA benchmarks; Reached over 8k stars on GitHub.

- **Proactive Agent:** Shifting LLM Agents from Reactive Responses to Active Assistance **2024**

Developed automated data generation/annotation system; Trained self-directed Agent predicting tasks without explicit human instructions. Released ProactiveBench dataset (6,790 events spanning smart homes, coding, writing) to benchmark proactive AI capabilities. Achieved 66.47% F1 score in proactive assistance via ProactiveBench fine-tuning, outperforming leading open/closed-source models (accepted by ICLR 2025).

- **LongPiBench:** Distance between Relevant Information Pieces Causes Bias in Long-Context LLMs **2024**

Designed a benchmark that isolates and analyzes absolute and relative positional biases to assess LLM localization errors in long texts; Revealed that current models are highly sensitive to the distance between relevant information segments.

- **EscapeBench:** Pushing Language Models to Think Outside the Box **2024**

Proposed EscapeBench, a benchmark for evaluating agents' abilities in creative reasoning, unconventional tool use, and iterative problem-solving to uncover implicit goals. Build the Reflection module of the EscapeAgent Framework to dynamically maintain a task list, allowing models to switch between free exploration and focused task execution.

Member of The CAR Lab | University of Delaware | advised by Prof. Weisong Shi (Pioneer of Edge Computing)

- Self-Driving Task Scheduling Framework based on Reinforcement Learning and Edge Computing **2022**

Designed docker-based task scheduling framework for autonomous vehicles solving self-driving orchestration challenges; Integrated dual-scale RL with actor-critic to automate driving task scheduling strategy learning. Achieved 79-97% throughput (+48.68% stability) through global feature-fusion state representation in RL.

WORK EXPERIENCE

Intelligent Stethoscope for Heart Sound Recognition | Founder | FinzHealth IoT Technology 2021.05 - 2023.11

- Invented a wireless intelligent stethoscope during the COVID-19 pandemic and founded FinzHealth IoT. Technology Co., LTD; Secured three patents, raised a million dollars in financing and reached hundreds of test users with Minimum Viable Product; Reduced high-frequency noise, downsampled to expand the sensing field and normalized the audio signal to unify the audio scale; Extracted features by spectral analysis and trained neural network models to classify four heart maladies, achieving 97% accuracy on test dataset.

Research and application of Large Language Models in financial field | Algorithm Engineer
China International Capital Corporation Limited (CICC) | AI Group 2023.01 - 2023.07

- Developed TOES algorithm (Tree of Embedding Search) to perform multi-level tree structure summarization and indexing of 90,000 financial research reports at vector level. Implemented pruning acceleration and improved recall accuracy, with recall rate rising from 88% to 93%; Proposed the Evil Prompts model security verification algorithm with modules for pre-context, tokenization, and sensitive content exploitation; leveraged deep recursive word generation with LLMs to craft queries that induce erroneous outputs.

AWARDS

- **National Level:** Second inventor of three patents; Completed national innovation and entrepreneurship training project (first place); First prize at National University Art Exhibition in 2021.
- **Provincial Level:** Third Prize at Jiangsu "Internet+" Innovation and Entrepreneurship Competition; Third Prize at "Winning in Nanjing" Innovation and Entrepreneurship Competition.
- **School Level:** 2021 Science and Technology Innovation Scholarship (5%), Academic Excellence Scholarship (5%); 2021 Leader of Academic Style Construction (1%); Second prize at Web Design Competition (5%).

ACTIVITIES

Documentary Director | Producer 2020.02 - 2020.08

- Produced a documentary film "Honglin Cuo". It was broadcasted by China National Radio and Television (CCTV-10), with a total viewership of more than 77 million.
- Filmed a documentary of COVID-19 called "The March", reflected by numerous official media outlets, with more than 1 million pageviews; received a letter of thanks from the Affiliated Union Hospital of Fujian Medical University, and the work were included in the Digital Museum of Huazhong University of Science and Technology.

SKILLS

- Proficient in Python, C, LaTeX, Linux, PyTorch.
- Familiar with various neural networks and modern deep learning techniques.