

# Qinyu Luo

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## EDUCATION

Johns Hopkins University, M.S. in Computer Science & Engineering Management | USA **09/2024 - 05/2026**

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

Hohai University, Department of Computer Science and Information | China **09/2019 - 06/2023**

- 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 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. Designed a self-evolving mechanism by storing action chains and retrieving successful outcomes. Beat GPT-4 models and AutoGPT on various math, code, and QA benchmarks; achieved over 8,000 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.

**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**

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**Intelligent Stethoscope for Heart Sound Recognition | Founder | FinzHealth IoT Technology 05/2021 - 11/2023**

- 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 01/2023 - 07/2023**

- 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**

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- **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**

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**Documentary Director | Producer 02/2020 - 08/2020**

- 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**

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