

Yunyue Su

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 OPilgrim |  Google Scholar |

Haidian, Beijing - 100000, China

OBJECTIVE

My research focuses on deep learning, natural language processing, and agent augmentation, particularly in event extraction, fact-checking, graph learning, tool and retrieval-augmented generation. Recently, I have extended my interest to multi-modal foundation models in AI4Science. During my PhD, I aim to advance the reasoning and continual learning capabilities of MLLMs and explore their applications in workflow planning and embodied intelligence.

EDUCATION

Computer Network Information Center, University of Chinese Academy of Sciences

Sept. 2020 - Jun. 2023

M.S., Computer Technology; Advised by Associate Professor [Yuanping Chen](#) and [Xiaoqian Zhu](#)

Beijing, China

GPA: 3.89/4.00, IELTS: 6.5 (2024.11)

College of Mathematics and Computer Science, Fuzhou University

Sept. 2016 - Jun. 2020

B.S., Computer Science and Technology; Advised by Professors [Xiangwen Liao](#) and [Qingyuan Bai](#)

Fujian, China

GPA: 3.70/4.00, Rank: 6/55

PUBLICATIONS AND PATENTS

C=CONFERENCE, J=JOURNAL, P=PATENT, S=IN SUBMISSION, T=THESIS

- [C.1] Yunyue Su, Zhang Jinshuai, Bowen Fang, Wen Ye, Jinghao Zhang, Qiang Liu, Bowen Song, Weiqiang Wang, Liang Wang. (2025). **Toolscaler: Scalable Generative Tool Calling via Structure-Aware Semantic Tokenization**. *EMNLP Findings*.
- [C.2] Wen Ye, Zhaocheng Liu, Gui Yuwei, Tingyu Yuan, Yunyue Su, Bowen Fang, Chaoyang Zhao, Qiang Liu, Liang Wang. (2025). **GenPilot: A Multi-Agent System for Test-Time Prompt Optimization in Image Generation**. *EMNLP Findings*.
- [C.3] Ge Shi*, Yunyue Su*, Yongliang Ma, and Ming Zhou. (2023). **A Hybrid Detection and Generation Framework with Separate Encoders for Event Extraction**. In *the 17th Conference of the European Chapter of the Association for Computational Linguistics*, pp. 3163-3180. Association for Computational Linguistics. 2023, Dubrovnik, Croatia. DOI: 10.18653/v1/2023.eacl-main.231.
- [J.1] Shu Wu, Zekun Li, Yunyue Su, Zeyu Cui, Xiaoyu Zhang, Liang Wang. (2025). **GraphFM: Graph Factorization Machines for Feature Interaction Modelling**. Manuscript submitted for publication in *Machine Intelligence Research*, DOI: 10.1007/s11633-024-1505-5.
- [S.1] Yunyue Su, Jiahui Chen, Zao Jiang, Zhenyi Zhong, Liang Wang, Qiang Liu. (2025). **Language Models Can Understand Spectra: A Multimodal Model for Molecular Structure Elucidation**. *arXiv preprint arXiv:2508.08441*.
- [P.1] Yongliang Ma, Yunyue Su, Ge Shi, and Ming Zhou. (2022). **Event extraction method, system and computer readable storage medium**. Lanzhou Technology Co Ltd, Patent No. CN202210160088.8A. Registration Date: 2022-02-22, Grant Date: 2022-06-21, Publication Date: 2022-06-21.
- [T.1] Yunyue Su. (2023). **Research on key technologies of document-level event extraction in financial risk Management field**. Library and Information Center, Chinese Academy of Sciences. Call number: LW212474.

* Equal Contribution.

EXPERIENCE

NLPR, Institute of Automation, CAS

2023 - Now

Advised by Professor [Qiang Liu](#), [Shu Wu](#), and [Liang Wang](#).

Beijing, China

Lead researcher on national key projects; core team contributor and co-author of academic publications.

Researcher

- Co-authored the paper *Toolscaler* with Prof. [Qiang Liu](#). This paper research efficient methods for enabling LLMs to invoke large-scale toolkits (over 47,000). Developed a structure-aware semantic tokenization scheme and a post-guided iterative training strategy, unifying tool representation, retrieval, and calling within a single generative process.
- Co-authored the paper *GraphFM* with Prof. [Shu Wu](#). This work pioneered the integration of graph structures into Factorization Machines (FM) frameworks, modeling feature interactions from a topological perspective. By leveraging GNN-based aggregation strategies, it explicitly captures high-order interactions while automatically filtering noise, addressing inherent limitations of traditional FMs. [Code]

Intermediate Engineer

- **Cross-Modal Scientific Data Framework:** Developed a foundation large language model integrating different spectral to infer molecular structures and properties, which accuracy rate of molecular structure prediction has increased by 31% compared to existing algorithms. [arXiv]
- **Algorithm Development Leadership:** Led R&D for industry-academia projects, including a national R&D sub-project on graph neural network-based industrial risk prediction (HuaXia Bank, 30 million CNY), Ant Group's retrieval-augmented controllable generation project (350K CNY), and Tencent's knowledge-driven LLM editing system (200K CNY).
- **RAG-based Multimodal Fact-Checking Platform:** Built a platform supporting multi-modal evidence retrieval and reasoning for offline/online fact-checking, deployed for clients such as the Chinese Academy of Sciences.

Computer Network Information Center, CAS

2020 - 2023

Graduate Student Researcher, Advised by Associate Professor [Yuanping Chen](#) and [Xiaoqian Zhu](#).

- Designed a *document-level generative event extraction framework for financial risk management*, integrating domain knowledge-enhanced multi-task training to address cross-sentence argument extraction and multi-event argument sharing in low-resource long-text scenarios, outperforms previous SOTA with 1.1% avg. F1 gain. [Report]

Baidu, Inc.

2022 - 2023

Research Intern, Mentored by [Tianfu Zhang](#).

- Developed a *probe-based* method to automatically generate syntactic dependency trees by extracting structured features from language models, enabling high-quality annotation for new texts and enhancing long-distance argument association modeling and extraction accuracy in event processing.

Langboat Co., Ltd

2021 - 2022

Research Intern, Mentored by [Yongliang Ma](#), Assistant Professor [Ge Shi](#), and Professor [Ming Zhou](#).

- Developed a *generative event extraction framework* for bank announcement data, integrating constrained decoding and adaptive template mechanisms (soft prompt/dynamic prefix) to resolve error-prone template generation and few-shot adaptation challenges. Achieved above 10% accuracy improvement in argument extraction and deployed in production with a [patent](#) application (CN*) filed.
- Designed a separate-encoder framework with joint bridging training to mitigate feature interference between event detection and argument extraction, resulting in 5.7% and 2% improvement, respectively. [Research](#) published as a long paper in EACL 2023. [Code]

Ruijie Networks Co., Ltd

2019 - 2020

Audio processing intern, Mentored by Honghe Wu

- Responsible for collecting and labeling audio data for training speech separation models; re-engineered the popular audio processing framework Kaldi using Python to achieve operator acceleration.
- Implemented an OCR recognition algorithm for PDF documents, using multimodal similarity calculation algorithms to match recognized document blocks and enable document plagiarism detection, deployed online via Docker.

Supercomputing Center, Department of Computer Science, Fuzhou University

2016 - 2020

Undergraduate Student Researcher, Advised by Professor [Xiangwen Liao](#) and [Qingyuan Bai](#).

- Designed and implemented an *end-to-end music recommendation* algorithm by leveraging temporal convolution networks to extract deep features from audio Mel-spectrograms, integrating user behavior sparse features and audio semantic features via DeepFM model for user interest prediction, and generating personalized recommendations based on ranking.
- Under the supervision of Prof. [Dong Zhang](#), collaborated with a team of 9 peers to design and develop Jarvis for Chat, an intelligent conversational assistant powered by large language models, as part of a software engineering capstone project. [Blogs, Github]

GRADUATE COURSEWORK

UCAS: The Design and Analysis of Computer Algorithm, Advanced Artificial Intelligence, Human-Computer Interaction, Deep learning for natural language processing, Big Data Analysis, Knowledge Graph, Advanced Software Engineering, Advanced Data Management, Internet Finance, The Introduction and Frontiers of Social Computing.

FZU: Artificial Intelligence, Pattern Recognition, Software Engineering, Algorithms and Data Structures, Computer Operating Systems, Principles of Computer Organization, Computer Networks, Compiler Design, Principles of Database Systems, Higher Mathematics, Linear Algebra, Discrete Mathematics, University Physics, Digital Circuits.

AWARDS AND HONORS

Master's Degree Academic Full Scholarships

2020 - 2023

University of Chinese Academy of Sciences

Outstanding Undergraduate Thesis

2020

Fuzhou University

Merit-based Scholarships

2016 - 2020

Fuzhou University

Outstanding Student Leader

2017 - 2019

Fuzhou University

EXTRACURRICULAR ACTIVITIES

Pattern recognition Lab Health Club

2023–Pres.

Volunteer | Beijing, China

- Responsible for organizing badminton activities twice a week and group swimming once a week in the laboratory.

Personnel education division

2022

Defense Secretary | Beijing, China

- Coordinated full-cycle academic defenses for 7 students and schedules for 17 faculty evaluators. Led official defense proceedings.

Computer Science Student Council

2016–2019

Director | Fuzhou, China

- Managed council's physical assets including office facilities and equipment inventory, while operating weekly consultation desks providing academic/administrative support to 300+ peers.
- Spearheaded logistics for major campus events including Freshman Orientation Week (600+ attendees) , School Sports Meet, etc.
- Initiated peer-led study groups weekly and improved participants' GPA across 10+ core courses.

Fuzhou University Library Association

2016–2019

Volunteer | Fuzhou, China

- Managed cataloging systems and patron services (book loans, research assistance), maintaining study-ready environments through noise regulation and facility upkeep.
- Conducted STEM-focused tours for K-12 groups at Technology Exhibition Hall and led university history presentations for official visitors.

INTERESTS

Cycling, Swimming, Badminton, HIIT, Strength training, and Karaoke.