

EDUCATION EXPERIENCE

Fudan University (GPA: 3.42/4.0, Rank: 17/69) Shanghai, China
M.Eng. in Electrical and Computer Engineering Sep. 2022 - Jun. 2025
Highlighted Courses: Computer Vision (A, 4.0), Robotics (A, 4.0), Frontiers in Intelligent Robotics (A, 4.0), Applied Mathematical Methods (B+, 3.3), Data Science (B+, 3.3)

Tianjin University (GPA: 85.10/100, Rank: 27/108) Tianjin, China
B.Eng. (Major) in Civil Engineering Sep. 2015 - Jun. 2019
Highlighted Courses: Advanced Mathematics (93), Probability Theory and Mathematic Statistics (92), Geographic Information System and Engineering (91)
B.Mgmt. (Minor) in Financial Management Sep. 2016 - Jun. 2019

PUBLICATIONS

- [1] **Qiao Sun**, *et al.* Rethinking ASTE: A Minimalist Tagging Scheme Alongside Contrastive Learning. To be submitted to **EMNLP**, 2024. [Preprint]
- [2] Nanyang Ye*, **Qiao Sun***, *et al.* Synergistic Development of Perovskite Memristors and Algorithms for Robust Analog Computing. Under Review in **Nature Communications**, 2024. [Paper]
- [3] Qi Fan, **Qiao Sun**, *et al.* DV2DM: A Learning-based Visible Difference Predictor for Videos. Submitted to **TPAMI**, 2024. [Paper]
- [4] Weihang Yin, ..., **Qiao Sun**, ..., Nanyang Ye, *et al.* (5th / 9 author) VL-Rotate: Vision-Language Learning for Few-Shot OoD Rotated Object Detection. Under Review in **NeurIPS**, 2024. [Paper]

RESEARCH EXPERIENCE

Rethinking ASTE: A Minimalist Tagging Scheme Alongside Contrastive Learning [1]

Independent research.

May 2023 - Feb 2024

- Proposed the first critical evaluation of the 2D tagging scheme, particularly focusing on the table-filling method. This analysis pioneers in providing a structured framework for the rational design of tagging schemes.
- Introduced a simplified tagging scheme with the least number of label categories to date, integrating a novel token-level contrastive learning approach to enhance PLM representation distribution.
- Demonstrated superior performance over state-of-the-art techniques and Large Language Models like GPT-3.5 and GPT-4 in few-shot learning scenarios.

Synergistic Development of Perovskite Memristors and Algorithms for Robust Analog Computing Leveraging Bayesian Optimization [2]

Intern at Shanghai AI Lab.

Mar 2023 - Feb 2024

- Engaged in the design of a robust architecture for neural network memristors, utilizing Bayesian algorithms.
- Led the experimental efforts, conducting extensive testing of our algorithms across multiple subtasks in domains such as computer vision, natural language understanding, 3D perception, and Large Language Models (LLMs).

- Developed the MemSim framework based on PyTorch for simulating memristor computations, enhancing the efficiency and accuracy of hardware emulation.
- Collaborated on the optimization of memristor device fabrication processes to improve performance.

Leveraging In-situ Training on Memristor Arrays for Multimodal Alignment [1]

Intern at Shanghai AI Lab.

Feb 2024 - Present

- Developing innovative techniques for in-situ training of multimodal alignment models on commercial memristor arrays, spearheading a novel backpropagation-free parameter update algorithm tailored for memristor arrays.
- Leading the entire project from inception to completion, overseeing all aspects of the research, development, and procurement process, ensuring seamless integration and execution of project objectives.

DV2DM: A Learning-based Visible Difference Predictor for Videos [3]

Intern at Shanghai AI Lab.

Oct 2023 - Present

- Conducted a comprehensive literature review and managed participant recruitment for a study involving human visual perception in video quality assessment.
- Processed data and applied for computational resources to support deep learning model training and evaluation.
- Drafted and revised the research paper, contributing to the design of U-Net architecture.

VL-Rotate: Vision-Language Learning for Few-Shot OoD Rotated Object Detection [4]

Participatory Research in Multimodal Models.

Aug 2023 - Feb 2024

- Implemented VL-Rotate to enhance few-shot OoD rotated object detection via vision-language learning, maximizing the semantic potential of encoder models for image-text alignment.
- Integral in the development and incorporation of OOTA and FRTC, bolstering the model's fine-tuning and detection precision.
- Conducted comprehensive evaluations against challenging few-shot OoD datasets, achieving a groundbreaking 75.2% mAP on HRSoD's OoD subset.

AWARD

Outstanding Internship Award (Shanghai AI lab)	2023
First-class Academic Scholarship (Fudan University)	2023

INTERN EXPERIENCE

Shanghai Artificial Intelligence Laboratory

Mar. 2023 - Present

Research Intern on Memristor-based Analog Computing and Artificial Intelligence.

Western Securities R&D Center, Financial Engineering Group

Dec. 2019 - Jul. 2020

Research Assistant on Data-driven Fund-of-fund Investment Strategies.

SKILLS

- **Programmng:** Python, Shell, C++, PyTorch, scikit-learn
- **Math:** Probability Theory, Probabilistic Graphical Models, Advanced Statistics
- **Hardware:** Memristor-based Neuromorphic Analog Computing, Circuits design
- **Tools:** PyCharm, VS Code, Visual Studio, Linux, GitHub
- **Language:** Mandarin (Native), English (Fluent)