Yikai Si

+86 18267965277 | yksi2023@sjtu.edu.cn | yksi.net

yksi2023

Shanghai 200240, China

Research Interest

My research interests span computational neuroscience and deep learning theory, including the physics of AI, with particular interest in representation, training dynamics, and generalization in artificial and biological neural systems.

Education

- **Shanghai Jiao Tong University** *Shanghai, China*
  B.S. in Physics 2023–2027 (expected)
  - Zhiyuan Honors Program

Academic Papers

- **Yikai Si** and Shanshan Qin. *Continual-learning rules shape representational drift*. arXiv:2608.16141, 2026.

Research Experience

- **Continual-learning rules shape representational drift** *2025.6–Present*
  arXiv preprint | *First Author* | *Supervisor: Shanshan Qin* [GitHub]
  - Studied how internal representations change during continual learning, separating behavioral retention from representational stability.
  - Compared visual and cognitive neural-network settings to measure drift across training checkpoints and task gaps.
  - Showed that stable task performance can coexist with changing internal codes, linking artificial continual learning with biological representational drift.
- **LLM Multimodal Framework for Few-Shot Prediction in Laser-Fusion Experiments** *2025.10–2026.1*
  Manuscript | *Third Author* | *Supervisor: Xiaohui Yuan, Jie Zhang*
  - Studied few-shot prediction of plasma evolution and collision timing in double-cone ignition laser-fusion experiments.
  - Used multimodal experimental diagnostics to improve prediction under shot-limited data conditions.
  - Demonstrated improved accuracy over conventional sequence-model baselines, supporting multimodal learning for high-cost physics experiments.

Skills

- **Programming:** Python, PyTorch, MATLAB, Bash, HPC cluster usage (SLURM)
- **Presenting Tools:** LaTeX, Markdown, Slidev on VSCode

Honors and Awards

- **Zhiyuan Honors Scholarship** *2023,2024,2025*
  Zhiyuan College, Shanghai Jiao Tong University
  - Awarded to students in the Honors Program with outstanding academic achievement.

Volunteer Experience

- **Winter Scarf Donation Volunteer** *2024*
  Zhiyuan College Youth Volunteer Service Team
  - Coordinated materials distribution and collection within the volunteer group; knitted scarves donated to children in rural mountainous areas.

Certifications

- TOEFL iBT: 101 *2025.2*
- CET-6: 598 *2024.6*
- CET-4: 640 *2023.12*