Jian Song

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LockFaiz | Jian Song | Denver, CO, USA

Research Interests

- Robotics physical interaction modeling and sim-to-real dynamics.
- Physically reliable world models and vision-language-action systems.
- Event-driven 3D perception with event cameras and point clouds.
- Spiking neural networks for efficient perception and control.

Education

- **University of Colorado Denver** *2026 – Present*
  PhD Student, Computer Science and Information Systems Denver, CO, USA
  - **PhD Advisor:** Professor Zhengxiong Li
- **The University of Edinburgh** *Sept. 2021 – Oct. 2022*
  Master of Science, Drug Discovery and Translational Biology Edinburgh, UK
- **Central China Normal University** *Sept. 2017 – June 2021*
  Bachelor of Science, Biotechnology Wuhan, China

Publications

1. **Jian Song**, Xiangfei Yang, Shangke Lyu, Donglin Wang (2025). **Activation-wise Propagation: A One-Timestep Strategy for Spiking Neural Networks**. *AAAI Conference on Artificial Intelligence*, 2026.
2. Xiangfei Yang, **Jian Song**, Xuetao Zhang, Donglin Wang (2024). **Adaptive Spiking TD3+BC for Offline-to-Online Spiking Reinforcement Learning**. *International Joint Conference on Neural Networks*, pp. 1–6. IEEE. DOI: 10.1109/IJCNN60899.2024.10650965.
3. **Jian Song**, Xiangfei Yang, Donglin Wang (2024). **Calibrating the Converted Spiking Reinforcement Learning**. *International Conference on Intelligent Computing*, pp. 419–431. Springer Nature Singapore. DOI: 10.1007/978-981-97-5581-3_34.

Research Experience

- **Machine Intelligence Lab, Westlake University** *Jan. 2023 – Nov. 2025*
  Research Assistant Hangzhou, China
  - Conducted research at the intersection of neuromorphic computing, event-driven perception, and RL.
  - Developed spiking models for point-cloud recognition, imitation learning, and ANN-SNN calibration.
  - Contributed to efficient neural computation methods for real-time sensing and decision-making.

Projects

- **Activation-wise Propagation (AMP2): A One-Timestep Strategy for Spiking Neural Networks** *2024 – 2025*
  Spiking neural networks
  - One-timestep SNN training with activation-wise propagation across MLP, CNN, and Transformer backbones.
  - Applied to point-cloud and event-stream recognition with better ModelNet40 and ScanObjectNN results.
- **SpikeCEIL: Spiking Contextual Imitation Learning for Continuous Control** *2023 – 2025*
  Imitation learning
  - Spiking CEIL for online/offline imitation learning in continuous control.
  - Added lfd/lfo support, source/target evaluation, and MuJoCo training scripts.
- **Adaptive Spiking TD3+BC for Offline-to-Online Fine-Tuning** *2024 – 2025*
  Offline-to-online RL
  - Adaptive offline-to-online fine-tuning Spiking RL.
  - Combined D4RL distillation, REDQ-style critics, and behavior cloning for stable MuJoCo experiments.
- **Spiking TD3 / TD3+BC Baselines** *2023 – 2025*
  Continuous control
  - Spiking actor-critic baselines for TD3, DDPG, and TD3+BC.
  - Added membrane-state handling and replay-buffer pipelines for stable SNN training.

Skills

- **Programming:** Python, PyTorch, Bash
- **Learning & Modeling:** Deep Reinforcement Learning, Offline RL, Imitation Learning, SNNs, ANN-to-SNN Calibration
- **Robotics & Perception:** Event Cameras, Point Clouds, VLA, World Models, Physical Interaction Modeling
- **Frameworks:** SpikingJelly, Gym, D4RL, TensorBoardX, Weights & Biases
- **Languages:** Mandarin (native), English (fluent)

Honors and Awards

- **CCNU Eighty-Two Academic Excellence Scholarship** — School of Life Science, Central China Normal University *Mar. 2019*
- **CCNU Mathematics Modeling Summer Camp Competition, 2nd Prize** — School of Mathematics, Central China Normal University *Jan. 2020*
- **National Excellent Project** — CCNU Undergraduate Innovation and Entrepreneurship Training Program; PHR1 gene senescence project *Oct. 2019*
- **Biological Experiment 3rd Prize** — Hubei Province Experimental Skills Competition *Oct. 2018*