Zihan Wang

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Education

University of Chinese Academy of Sciences, MS of Signal and Information Processing — Sep. 2023 – Jun. 2026

- **GPA:** 3.77/4.00
- **Research Project:** Spiking Neural Networks; Neuromorphic Computing; Computer Vision

University of Science and Technology Beijing, BS of Automation — Sep. 2019 – Jun. 2023

- **GPA:** 3.69/4.00
- **Coursework:** Principle and Application of Microcomputer; Digital electronic Technology; Fundamental of Programming; Mathematical Optimization in Engineering

Publications

[1] Zihan Wang, Yanxing Lu, Jinxin Li, *et al*. Energy-Efficient Attention-Based Spiking YOLO Network for SAR Ship Detection[C]. *IEEE International Geoscience and Remote Sensing Symposium (IGARSS 2025)*, Brisbane, Australia, 2025.

[2] Zihan Wang, Yanxing Lu, Yizhe Fan, *et al*. Energy-Efficient Spiking Attention YOLO Network for SAR Ship Detectio[J]. *IEEE Geoscience and Remote Sensing Letters*, 2025. (Under Review)

[3] Zihan Wang, Xinyi Ye, Qiang Li, *et al*. STDNet: A Spike-Driven Transformer Diffusion Network for Ship Detection in SAR Images[J]. *Journal of Radars*, 2025. (Under Review)

[4] Xinyi Ye, Yanxing Liu, Zihan Wang, *et al*. Energy-Efficient SAR Coherent Change Detection based on Deep Multi-Threshold Spiking-UNet[J]. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, 2025. doi: 10.1109/JSTARS.2025.3583058.

Projects

SNN and Neuromorphic Hardware Integration for Object Detection — Jul. 2025 - Present

- **Outline:** Deployed SNN–based detection pipelines onto neuromorphic FPGA hardware to enable energy-efficient SAR object detection.
- **Key Responsibilities:** Developed and optimized spiking neuron models under strict FPGA resource and timing constraints.

Spike-Driven Diffusion Method for Ship Detection in SAR Images — Feb. 2025 – Jul. 2025

- **Outline** Developed a Spiking Diffusion Model that leverages a diffusion process to improve multi-scale detection accuracy and employs spiking neurons to reduce energy consumption, overcoming the high energy demands and inflexibility of fixed-anchor SAR detectors.
- **Key Responsibilities:** Designed the end-to-end Spiking Diffusion pipeline, including noise-to-box denoising process and multi-scale feature integration.
- **Outcome:** The proposed STDNet reduces energy consumption by approximately two orders of magnitude compared to an ANN model of the same architecture, while improving accuracy by at least 4 points over other SNN algorithms on the HRSID dataset.

Spike-Attention YOLO Network for SAR Image Object Detection — Dec. 2024 – Jan. 2025

- **Outline** Faced with the high energy demands of ANNs in SAR detection and CNN's limited receptive field for large targets, this project designed an energy-efficient detection model with enhanced multi-scale object capabilities.
- **Key Responsibilities:** Implemented spiking attention modules and integrated SNN layers into the YOLO framework.
- **Outcome:** The proposed ESA-YOLO achieves a 5.7× reduction in energy consumption compared to an ANN of

the same architecture, while improving accuracy by at least 2 percentage points over other SNN algorithms on the HRSID dataset.

Awards

Honors

- **Excellent Merit Student**, UCAS (Top **15%**) Jun. 2024
- **Excellent Graduate of USTB**, USTB(Top **13%**) Jun. 2023
- **Excellent Merit Student**, USTB(Top **3%**) November 2022
- **Excellent Student Cadre**, USTB(Top **10%**) November 2021

Scholarships

- **Zhongtian Steel Scholarship** (¥5000) (equivalent to People's Special-Class Prize; Top **3%**) November 2022
- **People's Second-Class Scholarship** (¥1500) (Top **10%**) November 2021
- **People's Third-Class Scholarship** (¥500) (Top **30%**) November 2020

Skill Sets

Programming Languages: Python, C++

Frameworks: Proficient in PyTorch; familiar with SpikingJelly for spiking neural network development

Language Proficiency:

- China's National College English Test – Band 6 (CET-6): 512/710
- China's National College English Test – Band 4 (CET-6): 578/710