Haonan Qin (ORCID 0000-0002-1272-858X)

Associate Professor | Xidian University, Xi'an, China

—— **the School of Telecommunications Engineering**

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Professional Membership

- IEEE **Member**
- IEEE GRSS **Member**
- International Deep Space Exploration Association (IDSEA) **Member**
- China Society of Image and Graphics (CSIG) **Member**
- Chinese Institute of Electronics (CIE) **Member**
- China Institute of Communications (CIC) **Member**
- Chinese National Committee of International Society for Digital Earth (CNISDE) **Member**

Employment

Associate Professor, Xidian University 2026.09-present

Research Collaborators: Prof. **Weiying Xie** (wyxie@xidian.edu.cn).

Pre-Associate Professor (Huashan Talent Program), Xidian University 2024.07-2026.08

Young Scientists Fund (Category C), National Natural Science Foundation of China (NSFC), 2025.

Postdoctoral Researcher, Xidian University 2024.01-2026.12

Advisor: Prof. **Xiaopeng Shao** (xpshao@xidian.edu.cn, xpshao@opt.ac.cn).

Education

PhD in ***Information and Communication Engineering*** at ***Xidian University*** 2018.08-2023.12

Advisor: Prof. **Yunsong Li** (ysli@mail.xidian.edu.cn).

Dissertation: "*Research on Efficient Target Detection for Hyperspectral Remote Sensing Image*"

Excellent Doctoral Dissertation Awards of Shaanxi Province. *Postgraduate President Scholarship*.

Bachelor of ***Information Engineering*** at ***Xidian University*** 2014.08-2018.06

Research Profile

Focuses on: Intelligent interpretation of remote sensing images, with an emphasis on learning under limited supervision and efficient processing for Earth observation applications.

Areas of expertise: Target detection in hyperspectral images, object detection in optical images, generative self-supervised learning, efficient distributed deep learning, etc.

Publications include: IEEE TNNLS, IEEE TCSVT, IEEE TGRS, IEEE GRSL, Pattern Recognition, IEEE/CVF CVPR, IEEE/CVF ICCV, IEEE IGARSS, etc.

Peer Review and Academic Service

Guest Editor

- Remote Sensing, **Special Issue**: "*Deep Learning for Remote Sensing Image Interpretation: Semantic Segmentation, Object Detection, and Change Detection*", 2026.10-2027.08
  Guest editorial team: **Haonan Qin**, Jitao Ma, Weiying Xie, and Yunsong Li.

Journal Reviewer

- IEEE Transactions on Image Processing (**TIP**)
- IEEE Transactions on Neural Networks and Learning Systems (**TNNLS**)
- IEEE Transactions on Circuits and Systems for Video Technology (**TCSVT**)
- IEEE Transactions on Geoscience and Remote Sensing (**TGRS**)
- IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing **(J-STARS**)
- (Elsevier) Pattern Recognition (**PR**), (Elsevier) Neural Networks (**NN**), (MDPI) Remote Sensing

Technical Committee and Conference Service

- **Committee Member**, Technical Committee on Remote Sensing Images, CSIG.
- **Committee Member**, Technical Committee on Image Applications and System Integration, CSIG.
- **Session Convener**, Hyperspectral Remote Sensing session 2.1, Session I, Third Forum on Artificial Intelligence and Remote Sensing (AIRS 2026).
- **Forum Secretary**, Frontier Forum on Embodied Intelligence and Edge Perception, 19th China Electronics Information Conference (CEIC 2026).
- **Invited Speaker**, 2025 CSIG Symposium on Frontiers in Visual Sensing.
  Report: "*Research on Target Detection Methods for Hyperspectral Remote Sensing Images*"

Areas of Expertise

- **Target detection in hyperspectral images:** limited prior from target signature, background reconstruction and suppression, weak supervision, spectral-spatial similarity learning, etc.
- **Object detection in optical images**: one-stage detection of small and densely arranged objects, visual state space models, etc.
- **Generative self-supervised learning**: signature-constrained pretraining and fine-tuning, wavelet-based representations, Mamba and diffusion models for hyperspectral detection.
- **Efficient distributed deep learning**: transformer-based distributed hyperspectral processing, federated learning and coreset selection, low-bit model quantization, etc.

Representative Journal Publications

[1] Shuai Wang, **Haonan Qin**, Jun Ling, Zhou Ye, Yuan Qiu, Guantao Chen, Jitao Ma, Weiying Xie, and Yunsong Li. HTD-GMD: Hyperspectral Target Detection Based on Generative Self-supervised Learning with Mamba and Diffusion Models. ***IEEE Transactions on Circuits and Systems for Video Technology****, 2026, early access.* DOI: 10.1109/TCSVT.2026.3725281. **Corresponding author.**

[2] Haonan Qin, Shuai Wang, Yunsong Li, Weiying Xie, Kai Jiang, and Kailang Cao. A Signature-Constrained Two-Stage Framework for Hyperspectral Target Detection Based on Generative Self-Supervised Learning. ***IEEE Transactions on Geoscience and Remote Sensing****, vol. 63, Art. no. 5514917, pp. 1-17, 2025.* DOI: 10.1109/TGRS.2025.3564039.

[3] Haonan Qin, Shuai Wang, Yunsong Li, Weiying Xie, Kai Jiang, and Kailang Cao. Hyperspectral Target Detection Based on Generative Self-Supervised Learning With Wavelet Transform. ***IEEE Transactions on Geoscience and Remote Sensing****, vol. 63, Art. no. 5510815, pp. 1-15, 2025.* DOI: 10.1109/TGRS.2025.3549771.

[4] Haonan Qin, Weiying Xie, Yunsong Li, and Qian Du. HTD-TS^3: Weakly Supervised Hyperspectral Target Detection Based on Transformer via Spectral-Spatial Similarity. ***IEEE Transactions on Neural Networks and Learning Systems****, vol. 35, no. 11, pp. 16816-16830, 2024.* DOI: 10.1109/TNNLS.2023.3298145.

[5] Haonan Qin, Weiying Xie, Yunsong Li, Kai Jiang, Jie Lei, and Qian Du. Weakly supervised adversarial learning via latent space for hyperspectral target detection. ***Pattern Recognition****, vol. 135, Art. no. 109125, 2023.* DOI: 10.1016/j.patcog.2022.109125.

[6] Yunsong Li, **Haonan Qin**, and Weiying Xie. HTDFormer: Hyperspectral Target Detection Based on Transformer With Distributed Learning. ***IEEE Transactions on Geoscience and Remote Sensing****, vol. 61, Art. no. 5524715, pp. 1-15, 2023.* DOI: 10.1109/TGRS.2023.3317033. **ESI Highly Cited Paper.**

[7] Haozhi Shi, Weiying Xie, **Haonan Qin**, Yunsong Li, and Leyuan Fang. Visual State Space Model With Graph-Based Feature Aggregation for No-Reference Image Quality Assessment. ***IEEE Transactions on Circuits and Systems for Video Technology****, vol. 35, no. 6, pp. 5589-5601, 2025.* DOI: 10.1109/TCSVT.2025.3527930.

[8] Haonan Qin, Yunsong Li, Jie Lei, Weiying Xie, and Zhuo Wang. A Specially Optimized One-Stage Network for Object Detection in Remote Sensing Images. ***IEEE Geoscience and Remote Sensing Letters****, vol. 18, no. 3, pp. 401-405, 2021.* DOI: 10.1109/LGRS.2020.2975086.

[9] Weiying Xie, **Haonan Qin**, Yunsong Li, Zhuo Wang, and Jie Lei. A Novel Effectively Optimized One-Stage Network for Object Detection in Remote Sensing Imagery. ***Remote Sensing****, vol. 11, no. 11, Art. no. 1376, 2019.* DOI: 10.3390/rs11111376.

Representative Conference Publications

[1] Chenhe Hao, Weiying Xie, Daixun Li, **Haonan Qin**, Hangyu Ye, Leyuan Fang, and Yunsong Li. FedCS: Coreset Selection for Federated Learning. *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), pp. 15434-15443, 2025.* DOI: 10.1109/CVPR52734.2025.01438.

[2] Weiying Xie, Zihan Meng, Jitao Ma, Wenjin Guo, Haowei Li, **Haonan Qin**, Leyuan Fang, and Yunsong Li. Allowing Oscillation Quantization: Overcoming Solution Space Limitation in Low Bit-Width Quantization. *Proceedings of the IEEE/CVF International Conference on Computer Vision (**ICCV**), pp. 24615-24624, 2025.*

[3] Shuai Wang, Jun Ling, **Haonan Qin**, Zhou Ye, Guantao Chen, Yuan Qiu, Weiying Xie, and Yunsong Li. SSF-HTD: A Self-Supervised Framework for Hyperspectral Target Detection with Enhanced Spectral-Spatial Representations. *IEEE International Geoscience and Remote Sensing Symposium (**IGARSS**), 2026.* **Corresponding author.**

[4] Shuai Wang, Yunsong Li, Weiying Xie, **Haonan Qin**, Jiahao Guo, and Mingxuan Li. HTD-SAE: A Signature-constrained Autoencoder for Hyperspectral Target Detection through Large-scale Pre-training. *IEEE International Geoscience and Remote Sensing Symposium (**IGARSS**), pp. 8649-8653, 2025.* DOI: 10.1109/IGARSS55030.2025.11243848.

[5] **Haonan Qin**, Weiying Xie, Yunsong Li, and Qian Du. HTD-VIT: Spectral-Spatial Joint Hyperspectral Target Detection with Vision Transformer. *IEEE International Geoscience and Remote Sensing Symposium (**IGARSS**), pp. 1967-1970, 2022.* DOI: 10.1109/IGARSS46834.2022.9884695.

[6] **Haonan Qin**, Weiying Xie, Yunsong Li, Kai Jiang, Jie Lei, and Qian Du. PTGAN: A Proposal-Weighted Two-Stage GAN with Attention for Hyperspectral Target Detection. *IEEE International Geoscience and Remote Sensing Symposium (**IGARSS**), pp. 4428-4431, 2021.* DOI: 10.1109/IGARSS47720.2021.9553721.

[7] Zhuo Wang, **Haonan Qin**, Yunsong Li, Jie Lei, and Weiying Xie. SOON: Specifically Optimized One-Stage Network for Object Detection in Remote Sensing Imagery. *31st IEEE International Conference on Tools with Artificial Intelligence (**ICTAI**), pp. 531-538, 2019.* DOI: 10.1109/ICTAI.2019.00080.