

Peng Zhang

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<https://zhangxiaohua-github.github.io/>

Education and Job Experience

University of Houston

08/2025 – Now

Ph.D. Student, Geosensing, Civil and Environmental Engineering | GPA: 4.00/4.00

Honor: Presidential Scholarship

Tianjin Yunyao Yuhang Technology Co., Ltd.

07/2023 – 06/2025

SAR Imaging Algorithm Engineer, Satellite Data Department

University of Electronic Science and Technology of China

09/2020 – 06/2023

Master of Science, Instrument Science and Technology | GPA: 3.67/4.00

Honor: "Outstanding Graduate Student", 2022 | Outstanding Master's Thesis (1.62%) | "Huiling Technology Scholarship" (0.27%), 2022 | "Academic Youth", 2022 | "First-class Scholarship", 2022 | "Second-class Scholarship", 2021

University of Electronic Science and Technology of China

09/2016 – 06/2020

Bachelor of Engineering, Measurement and Control Technology and Instrumentation | GPA: 3.80/4.00

Honor: "Outstanding Student Scholarship", 2017 & 2018 & 2019 | "Eagle Scholarship", 2018

Publication

- Peng Zhang**, Yan Chen, Yunping Chen, Youchun Lu, Chunliang Xu. A Filtering Algorithm Based on Polarization Decomposition for Better Preserving PolSAR Image Scattering Features, IGARSS.
DOI: 10.1109/IGARSS47720.2021.9553607
- Peng Zhang**, Yan Chen, Yunping Chen. A Non-local Fuzzy C-Means Clustering Segmentation Algorithm Based on Comentropy and Between-Cluster Matrix to Overcome the Inherent Coherence Speckles of SAR Images. IGARSS.
DOI: 10.1109/IGARSS46834.2022.9884294
- Peng Zhang**, Yan Chen, Yunping Chen. Permafrost Stability and Land Surface Temperature Distribution Study Using Multi-source Remote Sensing Data in the Qinghai-Tibet Plateau. IGARSS.
DOI: 10.1109/IGARSS46834.2022.9884765
- Zhang, P., Chen, Y., Ran, Y., Chen, Y. Permafrost Early Deformation Signals Before the Norilsk Oil Tank Collapse in Russia. *Remote Sens.* 2022, 14(19), 5036.
<https://doi.org/10.3390/rs14195036>
- Peng Zhang**, Surui Xie. Earth Curvature Scaling Effect on SNR Signals of GNSS-IR and its correction (In Progress)

Research Experience

Earth Curvature Scaling Effect on SNR Signals of GNSS-IR and its correction

08/2025 – Now

- Determined that earth's curvature implements a compression operation on the SNR signals along the sin(e)-axis through the scaling factor S(e). As the elevation angle e increases, this compression effect gradually diminishes.
- Developed two methods to correct earth curvature scaling effect.

Transmission Infrastructure Risk Analysis under Land Deformation and Environmental Change

08/2025 – 12/2025

- Utilized OPERA DISP Sentinel-1 products and several environmental-related data, such as sea-level rise and storm surge, to systematically classify the deformation risk of power towers across the Gulf Coast.
- Produced actionable recommendations for transmission line planning, siting, and maintenance to support the Gulf Coast's growing energy needs.

GitHub: github.com/Milillo-lab/Transmission_Lines

SAR Satellite Research and Development

08/2023 – 06/2025

- Simulating echo signals from both airborne and spaceborne SAR systems. This simulation aids in subsequent comparisons with actual echo signal metrics.
- Deinterleaving, and decompressing echo data to calculate peak and integral sidelobe ratios, and to assess the quality of echo signals.
- Utilizing the Range-Doppler (RD) algorithm to compress echo signals in both the range and azimuth directions, enabling focused SAR imaging.

GitHub: github.com/zhangxiaohua-github/SAR-Echo-Simulation-And-Image-Focusing

Monitoring and Analysis of Surface Deformation in the Permafrost

03/2022 – 08/2022

- Analyzed permafrost surface deformation rate, then decomposed its interannual deformation and seasonal deformation, and finally compared the relationship between topographic slope and deformation rate.
- Revealed the permafrost deformation mechanisms and determined early surface deformation signals.

Published: mdpi.com/2072-4292/14/19/5036

Designing Image Filtering and Segmentation Algorithms

09/2020 – 01/2021

- For filtering algorithm: decomposed the target based on non-local Lee filter, combining with the scattering model to deal with the over-blurring problem caused by non-local filter and the difficulty of maintaining energy features.
- For segmentation algorithm: improved the similarity measurement method for the non-local means algorithm and obtained the adaptive weight parameter, as well as gained the segmentation algorithm through introducing the interclass dispersion effect term.

GitHub: github.com/zhangxiaohua-github/SAR-Image-Filtering-And-Segmentation