Peng Zhang

Email: zhang_peng_uestc@163.com Mobile: (86) 15528331268 Address: Chengdu, China

Education

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%)| "Huiding 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

1. **Peng Zhang**, Yan Chen, Yunping Chen, Youchun Lu, Chunliang Xu. A Filtering Algorithm Based on Polarization Decomposition for Better Preserving PolSAR Image Scattering Features. *2021 IEEE International Geoscience and Remote Sensing Symposium, IGARSS*, DOI: 10.1109/IGARSS47720.2021.9553607
2. **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. *2022 IEEE International Geoscience and Remote Sensing Symposium, IGARSS*.
3. **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. *2022 IEEE International Geoscience and Remote Sensing Symposium, IGARSS*.
4. **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

Research Experience

Monitoring and Analysis of Surface Deformation in the Norilsk Region Based on SBAS-InSAR Technology (Mentor: Prof. Yan Chen)

Independent Project, Remote Sensing Technology and Artificial Intelligence Research Center 03/2022-08/2022

- Applied the Small Baseline Subset Interferometric Synthetic Aperture Radar (SBAS-InSAR) to obtain its permafrost surface deformation rate, then utilized a sine model to decompose its interannual deformation and seasonal deformation, and finally compared the relationship between topographic slope and deformation rate.
- Revealed that when the annual average temperature continuously increases at a rate of 2◦c/year for 2∼3 consecutive years, permafrost areas with relatively large topographic slopes (>15◦) are more prone to severe surface deformation during the summer thaw period.
- Analyzed the permafrost deformation mechanisms and determined early surface deformation signals with the case of the oil tank collapse accident in the Norilsk region.

Analyzing Integration of Satellite Data Processing and Applied Common Technologies (Mentor: Prof. Yan Chen)

Algorithm Design, Remote Sensing Technology and Artificial Intelligence Research Center 09/2020-01/2021

- Participated in the design, debugging, and integration of SAR image filtering and segmentation algorithms, as well as software module integration work.
- For filtering algorithm: decomposed the target based on non-local Lee filter, combining with the scattering model for polarimetric SAR to deal with the over-blurring problem caused by non-local filter and the difficulty of maintaining energy features.
- For filtering algorithm: improved the similarity measurement method for the non-local means algorithm, and obtained the adaptive weight parameter of the non-local spatial information by combining the information

entropy within neighborhood gray-level histograms, as well as gained the segmentation algorithm through introducing the interclass dispersion effect term.

Calculation and Analysis of Flood-Affected Areas in the Poyang Lake Region (Mentor: Prof. Yan Chen)

Team Lead, Remote Sensing Technology and Artificial Intelligence Research Center 07/2020

- Processed Sentinel-1B data applying filtering, registration, threshold segmentation, and geocoding techniques based on SARscape.
- Conducted change detection to derive flood-affected area, contributing to flood disaster assessment efforts.

Full-time Job Experience

Tianjin Yunyao Yuhang Technology Co., Ltd.

SAR Imaging Algorithm Engineer, Satellite Data Department 07/2023-12/2023

- 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.

Leadership Activity

Innovation Management Program of the National University of Singapore (NUS) 07/2018-07/2022

- Led an 8-member team in researching Universal Studios Singapore's operational strategy, analyzing strengths, weaknesses, opportunities, and threats, while also studying key decisions contributing to profitable growth.

Editor intern of Journal of Radars (Aerospace Information Research Institute, CAS) 2023-2025

- Wrote popular science articles on radar technology, and operated the website and WeChat official account of the journal; organized journal forums.

Additional Information

Programming Languages:

- Python (2+ years), MATLABL (2+ years), C/C++ (1+ year)

Tools:

- Google Earth Engine (GEE): Familiar with GEE data processing process (proficient in employing GEE to process a variety of remote sensing data).
- ENVI, ArcGIS, QGIS, SARscape, Apache Doris, StamPS: Proficient in using these platforms to process optical or microwave remote sensing data.

Models/Methods/Professional Skills:

- Multi-source and remote sensing image processing: proficient in processing optical remote sensing images and SAR images.
- InSAR technique: PS-InSAR, SBAS-InSAR.
- Permafrost models: TTOP model, Stefan model, seasonal and interannual deformation decomposition model, late season settlement model, ALT estimation through InSAR.
- Synthetic Aperture Radar (SAR) Echo Signal Simulation and Imaging: proficiently simulate the echo signals of both airborne and satellite-borne SAR, and utilize RD/CS/BP algorithms for focusing the echo data and imaging.