

# Yuxing Chen

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## Work Experience

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### Remote Sensing Laboratory, University of Trento

Trento, Italy

STUDENT

11/2019 - present

- Developed a pixel-wise contrastive framework to perform unsupervised change detection in multisensor and multitemporal remote sensing images, achieving fine-grained change maps and temporal robustness in bitemporal image pairs. Created a new framework for unsupervised change detection in satellite image time series using contrastive learning with feature tracking.
- Built a unified model of incomplete multimodal learning for remote sensing data fusion using a random modality combination training strategy and the proposed attention block in network training, as well as the contrastive and reconstruction loss in pre-training, resulting in increased efficiency and accuracy in modal-incomplete inputs.
- Collected training labels from OpenStreetMap and images from ArcGIS Wayback imagery to train models in large-scale semantic segmentation and change detection tasks, demonstrating a useful and accessible approach.
- Developed an attention-based deep residual U-shaped network to mitigate atmospheric artefacts in InSAR interferograms, surpassing generic atmospheric correction models and achieving comparable results to advanced time-series InSAR methods.

### State Key Laboratory of Geodesy and Earth's Dynamics, CAS

Wuhan, China

STUDENT

9/2016 - 6/2019

- Created a DEM extraction workflow from declassified Hexagon spy images to study glacial changes in the central Karakorum area, providing insights into glacial thickness variations over the past 40-50 years.
- Monitored ground deformation in coastal areas of Hangzhou Bay using PS-InSAR and SBAS techniques, identifying potential risk areas and providing temporal-spatial patterns of displacements.
- Developed the "DSs-SBAS" method for monitoring permafrost deformation, improving the spatial and temporal resolutions of large-scale deformation measurements over permafrost regions in the Tibetan Plateau.
- Proposed an approach for large-scale active layer thickness inversion of permafrost using the SAR backscattering coefficient, MODIS surface temperature, and the seasonal deformation amplitude, providing a high-precision alternative for monitoring active layer thickness when field data is limited.

## Education

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### University of Trento

Trento, Italy

PHD OF INFORMATION ENGINEERING AND COMPUTER SCIENCE

2019-Now

### University of Chinese Academy of Sciences

Beijing, China

MASTER OF SCIENCE IN GEODESY AND SURVEYING ENGINEERING

2016-2019

## Publications

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- Y. Chen, L. Bruzzone, "A Self-Supervised Approach to Pixel-Level Change Detection in Bi-Temporal RS Images". IEEE Transactions on Geoscience and Remote Sensing (2022).
- Y. Chen, L. Bruzzone, "Self-Supervised SAR-Optical Data Fusion of Sentinel-1/-2 Images". IEEE Transactions on Geoscience and Remote Sensing (2022).
- Y. Chen, L. Bruzzone, "Self-supervised Change Detection in Multi-view Remote Sensing Images". IEEE Transactions on Geoscience and Remote Sensing (2021).
- Y. Chen, L. Jiang et al, "ARU-Net: Reduction of Atmospheric Phase Screen in SAR Interferometry Using Attention-based Deep Residual U-Net". IEEE Transactions on Geoscience and Remote Sensing (2021).
- Y. Chen, L. Jiang et al, "Monitoring Permafrost Deformation in the Upstream Heihe River, Qilian Mountain by Using Multi-temporal Sentinel-1 InSAR Dataset". Chinese Journal of Geophysics (2019).
- Y. Chen, L. Bruzzone et al, "Incomplete Multimodal Learning for Remote Sensing Data Fusion". arXiv preprint (2023).
- Y. Chen, L. Bruzzone, "Unsupervised CD in Satellite Image Time Series by Contrastive Learning and Feature Tracking". arXiv preprint (2023).

## Skills

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**Programming:** Expert in GAMMA software; Proficient in Python, Pytorch, git, Linux shell, ArcGIS.

**Areas of expertise:** Remote Sensing, Deep Learning, SAR/InSAR Data Processing.