Yuxing Chen

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Experience

PostDoc – *Intelligent Geospatial Data Processing* *2024.02 – 2025.02*
Laboratoire d'Informatique de Paris Descartes, Université Paris Cité. *Paris, France*

- Built a geospatial toolset integrating OSM, NASA EarthData, and GEE, enabling Retrieval-Augmented Generation for small LLMs to better perform spatial reasoning and decision-making in environmental tasks.
- Improved LLM-based geospatial workflows by introducing MCTS-driven tool usage and releasing a benchmark to evaluate autonomous agents on remote sensing and spatial analysis problems.
- Use relationships across multimodal and multitemporal remote sensing data to enable RGB-anchored cross-modal knowledge distillation from web-scale foundation models, supporting diverse data-oriented tasks.

PhD Candidate – *Multitemporal and Multimodal Self-supervised Learning* *2019.11 – 2023.11*
Remote Sensing Laboratory, Università degli Studi di Trento. *Trento, Italy*

- Proposed MarsSSL, a self-supervised framework for SHARAD radar on Mars, improving subsurface image modeling via enhanced spatial consistency and performance across classification, segmentation, and regression.
- Designed a multitemporal SSL approach to learn time-invariant representations from satellite imagery, enabling unsupervised change detection and feature tracking across bi-temporal and time-series remote sensing datasets.
- Built an incomplete multimodal remote sensing data fusion framework using a random modality combination training strategy and a contrastive-reconstruction joint loss, achieving higher accuracy with missing modalities.

Research Assistant – *Change Detection using Microwave Sensing* *2016.09 – 2019.09*
State Key Laboratory of Geodesy and Earth's Dynamics, CAS. *Beijing, China*

- Developed an InSAR subsidence detection framework using attention-based residual U-Net, mitigating atmospheric noise and achieving time-series-level accuracy with less data than conventional correction methods.
- Designed DSs-SBAS, a time-series InSAR method improving resolution and coverage of deformation monitoring in permafrost and coastal regions such as Hangzhou Bay and the Tibetan Plateau.
- Proposed a method to estimate permafrost active layer thickness using SAR backscatter, MODIS temperature, and seasonal deformation, enabling accurate monitoring without relying on in-situ observations.

Education

University of Trento, Italy supervised by Prof. Lorenzo Bruzzone and Stefano Vitale *2019 – 2023*

- Ph.D. in Information Engineering and Computer Science
- Transdisciplinary Programme in Space Data Science and Technology
- Innovation Certificate, School of Innovation

University of Chinese Academy of Sciences supervised by Prof. Liming Jiang *2016 – 2019*

- M.Sc. in Geodesy and Surveying Engineering

Publications

Automating Geospatial Vision Tasks with a Large Language Model Agent, ECML-PKDD, (2025).
Unsupervised CD in Satellite Image Time Series by Contrastive Learning and Feature Tracking, IEEE TGRS, (2024).
Incomplete Multimodal Learning for Remote Sensing Data Fusion, IEEE TGRS, (2023).
A Self-Supervised Approach to Pixel-Level Change Detection in Bi-Temporal RS Images, IEEE TGRS, (2022).
Self-Supervised SAR-Optical Data Fusion of Sentinel-1/-2 Images, IEEE TGRS, (2022).
Self-supervised Change Detection in Multi-view Remote Sensing Images, IEEE TGRS, (2021).
Reduction of Atmospheric Phase Screen in SAR Interferometry Using Attention-based Deep Residual U-Net, IEEE TGRS.

Skills

Areas of expertise: Remote Sensing, Deep Learning, SAR/InSAR Data Processing
Programming: Expert in GAMMA software; Proficient in Python, Pytorch, git, Linux shell, ArcGIS
Mentorship: Advised one bachelor's thesis and one PhD student on a journal paper
Teamwork: Collaborated with askEarth on EO-LLM project and a hyperspectral image project at RSLab
Individual Funding: Awarded Google Cloud research credits
Teaching: Course Assistant for Remote Sensing and Geodesy at the University of Chinese Academy of Sciences