Kang Liang

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Research Interests

I am interested in promoting the accuracy, standardization and intelligence of Synthetic Aperature Radar Interferometry (InSAR) in the big data era, applying InSAR technique to landslides identification, mechanics understanding and modeling. My current focuses include:

- Advanced InSAR time series processing techniques (e.g., PS, DS, phase linking, phase unwrapping and atmospheric delay correction)
- Deep learning for accurate and intelligent InSAR analysis
- State-of-art data science practices (e.g., massively parallel processing, cloud computing) for InSAR big data processing
- Accurate and interative InSAR big data visualization
- Landslides identification and modeling with multi-source observation

Education

Southern Methodist University — Dallas, Texas, U.S.
Ph.D. in Geophysics — *Jul 2021 – now*
Advisor: Prof. Zhong Lu

University of Science and Technology of China — Hefei, China
B.S. in Geophysics — *Sep 2016 – Jun 2020*

Publications

1. K. Liang, J. Kim, Z. Lu, H. Fattahi, M. G. Bato, V. Brancato, S. Jeong, and V. Karanam, "Offset Tracking With Geocoded SLC," *IEEE Transactions on Geoscience and Remote Sensing*, vol. 63, pp. 1–13, 2025.
2. K. Liang, Z. Lu, and J. Kim, "Deep Learning for InSAR Point Cloud Analysis: Phase Denoising and Measurement Point Refinement," *in preparation*, 2025.
3. K. Liang, Z. Lu, and J. Kim, "Moraine: MOdern RAdar Interferometry Environment in the Big Data Era," *in preparation*, 2025.
4. K. Liang, Z. Lu, and J. Kim, "Are Deep Learning Models Trained on Synthetic Data Actually Reliable in InSAR? A Self-Supervised Learning Approach for InSAR Phase Denoising," *submited*, 2025.

Invited Talks

1. "Offset tracking with geocoded SLC", NASA OPERA Project Science Team — *May 15th, 2024*

Paticipated Projects

Moraine - Modern Radar Interferometry Environment; A simple, stupid InSAR postprocessing tool in big data era

- A flexiable library with necessary infrastructure rather than a workflow like StamPS, MintPy, and Dolphin.
- Most robust and faster InSAR processing with deep learning.
- State-of-the-art Persistant Scatterer/Distributed Scatterer techniques.
- Best practice for scientific computing with massively parallel computing support (GPU/CPU).
- Low latency, high resolution, interative data visualization.

ATBD: Notebooks for NISAR Solid Earth Algorithm Theoretical Basis Document

- Implement jupyter notebooks for ATBD transient deformation requirement (663).
- Help revise the algorithm theoretical basis document.

OPERA Coregistered Single Look Complex (CSLC) validation tools

- Help develop and validate jupyter notebooks for absolute and relative geolocation error for sentinel-1 SLC.