Xu Si

(+86) 135-1719-9534 xusi@mail.ustc.edu.cn
Google Scholar (Xu Si) github.com/sixu0

Education

University of Science and Technology of China (USTC), Hefei, China 2020 – Present

Ph.D. Candidate in Geophysics (Advisor: Xinming Wu), expected June 2024.

China University of Geosciences (Beijing) (CUGB), Beijing, China 2017 – 2020

M.S. in Geophysics (Advisor: Yijun Yuan). (Theme:Seismic Data Denoising based on Deep Learning)

China University of Geosciences (CUG), Wuhan, China 2013 – 2017

B.S. in Applied Geophysics.

Selected Publications

- **Si, X.**, X. Wu*, H. Sheng, et al., SeisCLIP: A seismology foundation model pre-trained by multi-modal data for multi-purpose seismic feature extraction, arxiv:2309.02320.
- Sheng, H., X. Wu*, **X. Si**, et al., Seismic Foundation Model (SFM): a new generation deep learning model in geophysics, arxiv:2309.02791.
- **Si, X.**, X. Wu*, Z. Li*, et al., Multi-task multi-station earthquake monitoring: An all-in-one seismic Phase picking, Location, and Association Network (PLAN), *Communications Earth & Environment*, in revision. arxiv:2306.13918.
- Wu, X., J. Ma*, **X. Si**, et al., Sensing prior constraints in deep neural networks for solving geophysical problems, *PNAS*, 2023. (professor as first author)
- Wang, S., **X. Si***, et al., Structural Augmentation in Seismic Data for Fault Prediction, *Applied Science*, 2022.
- Yuan, Y.*, **X. Si**, et al., Ground roll attenuation using generative adversarial networks, *Geophysics*, 2020. (professor as first author)
- **Si, X.**, Y. Yuan*, et al., Attenuation of random noise using denoising convolutional neural networks, *Interpretation*, 2019.

Professional Experience

University of Science and Technology of China - Research Assistant. 2020 – Present

- Proposed an all-in-one earthquake monitoring system called seismic Phase picking, Location, and Association Network (PLAN) that achieves for the first time the simultaneous implementation of the three tasks with multi-station data and inter-task constraints.
- Introduced SeisCLIP, a foundational seismology model pretrained through contrastive learning on multi-modal data. The model was initially trained on a large dataset and subsequently fine-tuned for various applications like event classification, location, and focal mechanism analysis.
- Developed an earthquake prediction algorithm utilizing graph neural networks, harnessing earthquake catalogs and precursor data. Through monthly testing in the Sichuan-Yunnan region, we attained a precision rate of 20%, all the while maintaining stringent false alarm controls.
- In collaboration with the Anhui Earthquake Agency, we developed an earthquake-explosion classification algorithm based on a multiscale neural network. This algorithm has been deployed in a real-time system.

Honors and Awards

Best Student Presentation *1st*, Award on "The 4th Workshop of Artificial Intelligence in Seismology" Jul. 2023
Best Student Presentation *1st*, Award on "Boao Disaster Prevention and Mitigation Conference" Feb. 2023
Outstanding Graduates of CUGB (top 5% in the university) Jun. 2020
Best Student Poster *1st*, Award on "SEG International Workshop on Mathematical Geophysics" Nov. 2019
National Scholarship of Graduate Student (top 1% in the university). Nov. 2019
Outstanding Student in Geophysical Intern (top 5% in the university). Aug. 2016

Teaching Assistant

GEPH6401P.01 Artificial Intelligence in Geosciences (Master) 2021-2022 Fall
ESS1502 Artificial Intelligence in Geosciences (Header TA) 2020-2021 Fall and 2021-2022 Fall