Dawei Liu

Personal Information

Name: Dawei Liu Gender: Male Date of Birth: 12th August, 1991
Place of Birth: Jinzhong, Shanxi, China
Business Address: 550 Stadium Mall Drive, West Lafayette, IN, USA, 47907
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Research Focus

Seismic signal processing, deep learning, tensor decomposition, and time-frequency analysis

Skills

Tensorflow, Pytorch, Python, GPU, CUDA, Matlab, and Parallel Computing

Education

- September 2018 – September 2022 **Supervisor**: Wenchao Chen
  PhD candidate in Information and Communication Engineering, Xi'an Jiaotong University, China.
- January 2020 – July 2022 **Supervisor**: Mauricio D. Sacchi
  Visiting PhD student in Physics, University of Alberta, Canada.
- September 2015 - July 2018 **Supervisor**: Wenchao Chen
  Master student in Electronics and Communication Engineering, Xi'an Jiaotong University, China.
- September 2009 - June 2013
  Bachelor student in Communication Engineering, Chang'an University, China.

Employment

- November 2022 – October 2023 **Supervisor**: Elita Yunyue Li
  Postdoctoral Scholar, Purdue University, USA.

Peer-reviewed Papers

1. **Dawei Liu**, Mauricio D. Sacchi, Xiaokai Wang, and Wenchao Chen, (2023), " Unsupervised deep learning for ground roll and scattered noise attenuation," IEEE Transactions on Geoscience and Remote Sensing, 1-17.

2. **Dawei Liu**, Wenli Niu, Xiaokai Wang, Mauricio D. Sacchi, Wenchao Chen, and Cheng Wang, (2023), "Improving vertical resolution of vintage seismic data by a weakly supervised method based on Cycle GAN," Geophysics, 88: 1-103.

3. **Dawei Liu**, Wei Wang, Xiaokai Wang, Zhensheng Shi, Mauricio D. Sacchi, and Wenchao Chen, (2023), "Improving sparse representation with deep learning: a workflow for separating strong background interference," Geophysics, 88: WA253-WA266.

4. Xiaokai Wang, Siyuan Fan, Chen Zhao, **Dawei Liu,** and Wenchao Chen, (2023), "A Self-Supervised Method Using Noise2Noise Strategy for Denoising CRP Gathers," IEEE Geoscience and Remote Sensing Letters, 20: 1-5.

5. **Dawei Liu**, Xiaokai Wang, Xiaohai Yang, Haibo Mao, Mauricio D. Sacchi, and Wenchao Chen, (2022), " Accelerating seismic scattered noise attenuation in OVT domain: application of deep learning," Geophysics, 87: V505-V519.

6. **Dawei Liu**, Mauricio D. Sacchi, and Wenchao Chen, (2022), " Efficient Tensor Completion Methods for 5-D Seismic Data Reconstruction: Low-Rank Tensor Train and Tensor Ring," IEEE Transactions on Geoscience and Remote Sensing, 60, 1-17.

7. **Dawei Liu**, Haoqi Zhang, Xiaokai Wang, Wenchao Chen, Zhensheng Shi, and Zhonghua Zhao, (2022), "Separation of seismic multiple reflection-refraction based on morphological component analysis with high-resolution linear Radon transform," Geophysics, 87, V367-V379.

8. **Dawei Liu**, Xiangfang Li, Wei Wang, Xiaokai Wang, Zhensheng Shi, and Wenchao Chen, (2022), "Eliminating harmonic noise in vibroseis data through sparsity promoted waveform modeling," Geophysics, 87, V183-V191.

9. Weiwei Xu, Yanhui Zhou, **Dawei Liu**, Xiaokai Wang, and Wenchao Chen, (2022), "Seismic Intelligent Deblending via Plug and Play Method With Blended CSGs Trained Deep CNN Gaussian Denoiser," IEEE Transactions on Geoscience and Remote Sensing (TGRS), 60, pp. 1-1.

10.Xiaokai Wang, Zhizhou Huo, **Dawei Liu**, Weiwei Xu, and Wenchao Chen, (2022), "A common-reflection-point gather random noise attenuation method based on the synchrosqueezing wavelet transform," Interpretation, 10, SA59-SA67.

11.Xiaokai Wang, **Dawei Liu**[*],and Wenchao Chen, "Accelerating seismic dip estimation with deep learning," IEEE Geoscience and Remote Sensing Letters, vol. 19, pp. 1-5, 2022.

12.**Dawei Liu**, Lei Gao, Xiaokai Wang, and Wenchao Chen, (2021), "A dictionary learning method with atom splitting for seismic footprint suppression," Geophysics, 86, V509-V523.

13.Yanglijiang Hu, **Dawei Liu**, Xiaokai Wang, Zhonghua Zhao and Wenchao Chen, "Attenuation of the multiple reflection-refraction in 2-d common-shot gather via random-derangement-based fx cadzow filter," IEEE Geoscience and Remote Sensing Letters, vol. 19, pp. 1-5, 2022.

14.**Dawei Liu**, Zheyuan Deng, Cheng Wang, Xiaokai Wang and Wenchao Chen, "An unsupervised deep learning method for denoising prestack random noise," IEEE Geoscience and Remote Sensing Letters, vol. 19, pp. 1-5, 2022.

15.**Dawei Liu**, Wei Wang, Xiaokai Wang, Cheng Wang, Jiangyun Pei and Wenchao Chen, "Poststack seismic data denoising based on 3-d convolutional neural network," IEEE Transactions on Geoscience and Remote Sensing, vol. 58, no. 3, pp. 1598-1629, 2020.

Papers Under Review

1. Ji Li, and Dawei **Liu**[*], (2023), "Robust multi-dimensional reconstruction via Group Sparsity with Radon operators," IEEE Transactions on Geoscience and Remote Sensing. (Under

revision).

Meeting Abstracts

1. **Dawei Liu**, Xiaohai Yang, Xiaokai Wang, Haibo Mao, Mauricio D. Sacchi, and Wenchao Chen, (2021), "Deep learning for prestack strong scattered noise suppression," SEG Technical Program Expanded Abstracts : 1601-1605.

2. Haoqi Zhang, **Dawei Liu**, Xiaokai Wang, and Wenchao Chen, (2021), "Attenuation of multiple reflection-refraction in tau-p domain via morphological component analysis," SEG Technical Program Expanded Abstracts : 2974-2978.

3. Qinlong Hou, **Dawei Liu**, Xiaokai Wang, and Wenchao Chen, (2021), "Adaptive DAS coupling noise suppression based on local MCA," SEG Technical Program Expanded Abstracts : 2979-2983.

4. Chen Zhao, Li Jiang, Xiaokai Wang, **Dawei Liu**, Zhensheng Shi, and Wenchao Chen, (2021), "Prestack seismic noise attenuation based on 3D CWT," SEG Technical Program Expanded Abstracts : 2834-2838.

5. **Dawei Liu**, Wenchao Chen, Mauricio D. Sacchi, and Hongxu Wang, (2020), "Should we have labels for deep learning ground roll attenuation?," SEG Technical Program Expanded Abstracts : 3239-3243.

6. **Dawei Liu**, Zheyuan Deng, Xiaokai Wang, Wei Wang, Zhensheng Shi, Cheng Wang, and Wenchao Chen, (2020), "Must we have labels for denoising seismic data based on deep learning?," SEG Global Meeting Abstracts : 31-35.

7. **Dawei Liu**, Xiaokai Wang, Zhensheng Shi, Yanhui Zhou, and Wenchao Chen, (2019), "A convolutional neural network for seismic dip estimation," SEG Technical Program Expanded Abstracts : 2634-2638.

8. **Dawei Liu**, Xiaokai Wang, Wenchao Chen, Yanhui Zhou, Wei Wang, Zhensheng Shi, Cheng Wang, and Chunlin Xie, (2019), "3D seismic waveform of channels extraction by artificial intelligence," SEG Technical Program Expanded Abstracts : 2518-2522.

9. **Dawei Liu**, Wei Wang, Wenchao Chen, Xiaokai Wang, Yanhui Zhou, Zhensheng Shi. Random noise suppression in seismic data: what can deep learning do? [C].2018 SEG Annual Meeting, 2018. [*Cited by Professor Öz Yilmaz in his new book: Land seismic case studies for near-surface modeling and subsurface imaging, 2021.]*

10. Fen Zhang, **Dawei Liu**, Xiaokai Wang, Wenchao Chen. Random noise attenuation method for seismic data based on deep residual network[C]. 2018 CPS/SEG Annual Meeting, 2018.

11. Siqi Chi, Wenchao Chen, Lu Zhang, **Dawei Liu**, Jianyou Chen. Three-dimensional seismic texture attributes analysis based on removed strong background noise[C]. 2018 CPS/SEG Annual Meeting, 2018.

12. Jianyou Chen, Wenchao Chen, Xiaokai Wang, **Dawei Liu**. The DAS coupling noise removal using alternating projection iteration with united sparse transforms. 2018 CPS/SEG Annual Meeting, 2018.

13. Jianyou Chen, Yuefeng Pang, Wenchao Chen, Lei Gao, **Dawei Liu**. The analysis of space

dimensionality reduction error in SVD filtering algorithm with application to VSP wavefield separation [C].2018 CPS/SEG Annual Meeting, 2018.

Service to the profession

Peer Reviewer for:
Geophysics, IEEE Transactions on Geoscience and Remote Sensing, Geoscience and Remote Sensing Letters, Acta Geophysics, Petroleum Science, International Conference on Physics, Mathematics and Statistics, Frontiers, Journal of Geophysics and Engineering, IMAGE

Session Chair for IMAGE MLDA session (2023)

Editorial Board Member for *Geology Geophysics and Earth Science*

Awards and Honors

National Award scholarship of PhD Student, October 2020
School outstanding postgraduate Cadre, September 2016
School outstanding graduate students, September 2013