

Xiaolong Wei

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Education

- 2018– **Ph.D in Geophysics**, University of Houston, Houston, USA
- 2015–2018 **M.S. in Geology**, Northwest University, Xi'an, China
- 2011–2015 **B.S. in Geophysics**, China University of Geosciences, Beijing, China

Research Interests

- Geophysical inverse problems for multiple data sets (e.g., gravity, gravity gradiometry and magnetic)
- Structural similarity constraint joint inversion
- Uncertainty analysis in geophysical separate/joint inversions in both deterministic and stochastic frameworks
- Geology differentiation models
- Machine/deep learning algorithms applied to geophysical data interpretations

Awards & Honors

- 2021 Outstanding Academic Achievement, University of Houston, Houston, USA
- 2021 Best Poster in the Mining Sessions at the 2020 SEG Annual Meeting
- 2020 Outstanding Academic Achievement, University of Houston, Houston, USA
- 2018 First Prize Scholarship, Northwest University, Xi'an, China
- 2017 First Prize Scholarship, Northwest University, Xi'an, China
- 2016 First Prize Scholarship, Northwest University, Xi'an, China
- 2015 Best Bachelor Thesis, China University of Geosciences, Beijing, China
- 2013 Second Prize Scholarship, China University of Geosciences, Beijing, China

Publications

Peer-Reviewed

4. Hu, Y., **Wei, X.**, Wu, X., Sun, J., Chen, J., Huang, Y., Chen, J., 2021. A deep learning enhanced framework for multi-physics joint inversion. *IEEE TRANSACTIONS ON NEURAL NETWORKS AND LEARNING SYSTEMS*. under review
3. **Wei, X.** and Sun, J., 2020. Uncertainty analysis of 3D potential-field deterministic inversion using mixed Lp norms. *Geophysics*. under review
2. Sun, J., **Wei, X.**, 2020. Recovering sparse models in 3D potential-field inversion without bound dependence or staircasing problems using a mixed Lp-norm regularization. *Geophysical Prospecting*. doi:[10.1111/1365-2478.13063](https://doi.org/10.1111/1365-2478.13063).
1. Sun, J., Melo, A., Kim, J.D. and **Wei, X.**, 2020. Unveiling the 3D undercover structure of a Precambrian intrusive complex by integrating airborne magnetic and gravity gradient data into 3D quasi-geology model building. *Interpretation*, 8(4), pp.1-50. doi:[10.1190/INT-2019-0273.1](https://doi.org/10.1190/INT-2019-0273.1).

In preparation

1. **Wei, X.** and Sun, J., 2021. Uncertainty analysis of 3D geology differentiation models via joint inversion.

Conference Proceedings

3. **Wei, X.** and Sun, J., 2020. Uncertainty analysis of joint inversion using mixed Lp-norm regularization. In *SEG Technical Program Expanded Abstracts 2020* (pp. 925-929). Society of Exploration Geophysicists. doi:[10.1190/segam2020-3428359.1](https://doi.org/10.1190/segam2020-3428359.1).
2. **Wei, X.** and Sun, J., 2020. Quantifying uncertainties of deterministic geophysical inversions using mixed Lp norms. In *SEG Technical Program Expanded Abstracts 2020* (pp. 1404-1408). Society of Exploration Geophysicists. doi:[10.1190/segam2020-3420227.1](https://doi.org/10.1190/segam2020-3420227.1).
1. Sun, J., Melo, A., Deok Kim, J. and **Wei, X.**, 2020. Characterizing a Precambrian intrusive complex by integrating potential field data into 3D quasi-geology model building. In *SEG Technical Program Expanded Abstracts 2020* (pp. 1374-1378). Society of Exploration Geophysicists. doi:[10.1190/segam2020-3428385.1](https://doi.org/10.1190/segam2020-3428385.1).

Teaching

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| 2019 | Undergraduate field camp, teaching assistant , University of Houston |
| 2020 | GEOL 7330: Potential Field Methods of Geophysical Exploration (graduate core course), guest lecturer , University of Houston |

Professional Affiliations & Activities

- 2020– Core contributor of joint inversion code in SimPEG (<https://simpeg.xyz/>)
- 2020– American Geophysical Union (AGU)
- 2020– European Association of Geoscientists & Engineers (EAGE)
- 2018– Society of Exploration Geophysicists (SEG)

Certifications

- 2018 Certificate signed by Prof. Andrew Ng upon successfully completing the online machine learning course provided by Stanford University through Coursera Inc.