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

2012 Outstanding Volunteer for rural elementary schools, 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.

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.

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.

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.

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.

Teaching

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.