# Haojie Wang, Ph.D.

Postdoctoral Researcher/Research Scientist
Dept. Civil and Environmental Engineering,
The Hong Kong Univ. of Science and Technology, Clear Water Bay, Kowloon, Hong Kong
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## EDUCATION

**Ph.D.** **The Hong Kong University of Science and Technology, Hong Kong** **2020**

- Civil Engineering
- Thesis: "Machin Learning Powered Landslide Identification and Susceptibility Assessment"
- Advisor: Limin Zhang
- Committee: Jianye Ching, Jidong Zhao, Mengqian Lu and Tiezheng Qian

**B.Eng.** **China University of Geosciences, Wuhan** **2016**

- Civil Engineering
- Dissertation: "Study on Partial Revival Mechanism and Stability of Fuma Ancient Landslide in the Three Gorges Reservoir"
  *Excellent Bachelor's Degree Dissertation Award of Hubei Province, China*
- Advisor: Kunlong Yin
- Grade ranking: 1st/208, top 1%

## RESEARCH

My research focuses on the investigation of rain- and earthquake-induced landslides using artificial intelligence (AI) and remote sensing techniques, the analysis of real-time slope reliability using multi-source monitoring information, as well as developing machine learning-based solutions for snow/glacier analyses. My research area mainly covers the entire Hong Kong and the Tibetan Plateau.

My current research interests and ongoing research projects encompass three fields: 1) AI-powered landslide identification, susceptibility assessment and forecasting, 2) ML-based automated snow/glacier mapping and evolution analysis, and 3) Dynamic landslide reliability analysis using monitoring and remote sensing data.

## PARTICIPATED RESEARCH PROJECTS

1. **Centre for Slope Safety, Research Grant Council of Hong Kong, 2019 – now**
   - Establishment of the **R**ainstorm and natural t**E**rrain landslide **D**atabase of **H**ong **K**ong (**READHK**)
   - AI-powered landslide identification, susceptibility assessment and forecasting
2. **Multi-source large-quantity monitoring data fusion in Bayesian networks for the evaluation of reliability of engineered slopes, Research Grant Council of Hong Kong, 2016 - 2019**
   - A novel physically-based model for updating landslide susceptibility
3. **Study on Partial Revival Mechanism and Stability of Fuma Ancient Landslide in the Three Gorges Reservoir, Final Year Project, 2016**
   - Ancient landslide Partial Revival Mechanism analysis and numerical modelling of landslide revival

## PUBLICATIONS AND MANUSCRIPTS

***Manuscripts in preparation***

1. **Wang, H.J.,** Zhang, L.M., 2021. Transfer learning reshapes machine learning in geoscience: Insights from predicting landslide hazards in Hong Kong. *Under preparation.*
2. **Wang, H.J.,** Zhang, L.M., 2021. Multiscale landslide susceptibility assessment in Hong Kong via transfer learning. *Under preparation*.

3. **Wang, H.J.,** Zhang, L.M., 2022. A bio-inspired method for enhancing the durability of hydrophobic sands. *Under preparation*.
4. **Wang, H.J.,** Zhang, L.M., 2022. Event-based landslide forecasting in Hong Kong using machine learning. *Under preparation.*

***Manuscripts in review and revision***

1. **Wang, H.J.,** Zhang, L.M., Wang, L., Fan, R.L., Zhou, S.Y., Qiang, Y.Q., Peng, M., 2021. Machine learning powered automated co-seismic landslide detection. **Engineering Geology,** Under review.

***Published and accepted peer-reviewed journal papers***

1. **Wang, H.J.,** Zhang, L.M., Luo, H.Y., He, J., Cheung, R.W.M., 2021. AI-powered landslide susceptibility assessment in Hong Kong. **Engineering Geology,** https://doi.org/10.1016/j.enggeo.2021.106103.
2. **Wang, H.J.,** Zhang, L.M., Yin, K., Luo, H.Y., Li, J.H., 2021. Landslide identification using machine learning. **Geoscience Frontiers**, https://doi.org/10.1016/j.gsf.2020.02.012. (**Clarivate ESI Hot Paper& Highly Cited Paper as of July 2021**)
3. **Wang, H.J.,** Zhang, L.M., Wang, L., He, J., Luo, H.Y., 2021. An Automated Snow Mapper Powered by Machine Learning. **Remote Sensing**, 13(23), 4826. https://doi.org/10.3390/rs13234826.
4. **Wang, H.J.,** Xiao, T., Li, X.Y., Zhang, L.L., Zhang, L.M., 2019. A novel physically-based model for updating landslide susceptibility. **Engineering Geology** 251: 71-80. https://doi.org/10.1016/j.enggeo.2019.02.004.
5. Luo, H. Y., Zhang, L.M., **Wang, H.J.,** He, J., 2021. Process of building collapse caused by the Po Shan Road landslide in Hong Kong on 18 June 1972. **Landslides**, https://10.1007/s10346-021-01745-y.
6. Qiang, Y.J., Zhang, L.M., He, J., Xiao, T., Huang, H.H., **Wang, H.J.,** 2021. Urban flood hazards in the Guangdong-Hong Kong-Macau Greater Bay Area upon compound rainstorm-storm surge events, **Journal of Hydrology,** https://doi.org/10.1016/j.jhydrol.2021.126293.
7. Luo, H. Y., Zhang, L.M., **Wang, H.J.,** He, J., 2020. Multi-hazard vulnerability of buildings to debris flows. **Engineering Geology**, https://doi.org/10.1016/j.enggeo.2020.105859.
8. Luo, H.Y., Fan, R.L., **Wang, H.J.,** Zhang, L.M., 2020. Physics of building vulnerability to debris flows, floods and earth flows. **Engineering Geology**, https://doi.org/10.1016/j.enggeo.2020.105611.
9. Yin, K., Zhang, L.M., **Wang, H.J.,** Zou, H., Li, L.J., 2020. Marine soil behavior classification using CPTu and borehole records. **Canadian Geotechnical Journal**, https://doi.org/10.1139/cgj-2019-0571.
10. Fan, R.L., Zhang, L.M., **Wang, H.J.,** Fan, X.M., 2018. Evolution of debris flow activities in Gaojiagou ravine during 2008-2016 after the Wenchuan earthquake. **Engineering Geology** 235: 1-10. https://doi.org/10.1016/j.enggeo.2018.01.017.

***Published conference papers***

1. **Wang, H.J.,** Zhang, L.M., Xiao, T. 2020. DTM and rainfall-based landslide susceptibility analysis using machine learning: A case study of Lantau Island, Hong Kong, **APSSRA 2020**, Tokyo, Japan. https://doi.org/10.15083/00079806.
2. **Wang, H.J.,** Zhang, L.M., 2019. Landslide susceptibility updating considering real-time observations, **Geo-Congress 2019**: Soil Erosion, Underground Engineering, and Risk Assessment. American Society of Civil Engineers Reston, VA, pp. 107-113. https://doi.org/10.1061/9780784482155.011.

## PROFESSIONAL SERVICE

***Journals and conferences reviewer***

- Engineering Geology
- Bulletin of Engineering Geology and the Environment
- Georisk: Assessment and Management of Risk for Engineered Systems and Geohazards
- Lithosphere

- Geomatics Natural Hazards & Risk
- Geocarto International
- The International Conference on Embankment Dams (ICED2020), Beijing, China
- Geo-Extreme 2021, Savannah, Georgia, USA

***Presentations***

- The Fifth International Young Scholars Geo-Symposium, Beijing, China, November 15-16, 2021. (Oral presentation, invited by Prof Bo Zhang of Peking University)
- The 7th Asian-Pacific Symposium on Structural Reliability and Its Applications, Tokyo, Japan, October 5-7, 2020. (Oral presentation)
- EGU2020: Sharing Geoscience Online, May 4-8, 2020. (Oral presentation)
- Geo-Congress 2019: Soil Erosion, Underground Engineering, and Risk Assessment. Philadelphia, Pennsylvania, USA, March 24–27, 2019. (Oral presentation)
- Computational Modelling of Multi-Uncertainty and Multi-Scale Problems 2017 (COMUS17), Porto, Portugal, September 12-14, 2017. (Oral presentation)

## TEACHING EXPERIENCE

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|---|---|
| HKUST CIVL1160: Civil Engineering and Modern Society, **Teaching Assistant** | 2019 |
| HKUST CIVL1160: Civil Engineering and Modern Society, **Teaching Assistant** | 2018 |
| HKUST CIVL1160: Civil Engineering and Modern Society, **Teaching Assistant** | 2017 |
| HKUST CIVL 2410: Environmental Assessment and Management, **Teaching Assistant** | 2016 |

## FELLOWSHIPS AND AWARDS

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| Postdoctoral fellowship, The Hong Kong University of Science and Technology | 2020 |
| Postgraduate studentship, The Hong Kong University of Science and Technology | 2016 |
| **Excellent Bachelor's Degree Dissertation Award**, Provincial Education Board of Huber Province | 2016 |
| Excellent Graduate Award, China University of Geosciences (Wuhan) | 2016 |
| Award of Excellence, National "Zhou Peiyuan" Mechanical Competition | 2015 |
| **National Scholarship**, Chinese Ministry of Education | 2013 |
| Excellent Student Award, China University of Geosciences (Wuhan) | 2013 |

## PROFESSIONAL SKILLS AND CERTIFICATES

- Data processing and analysis
- Machine learning programming
- Remote sensing image interpretation (e.g., ENVI, ArcGIS, SNAP, etc.)
- Field investigation and mapping
- China Computer Test Level II C Language Excellent Certificate
- China Computer Test Level III Network Technique Certificate