

Curriculum Vitae

Personal Data

Title	Professor
First name	Yong
Last name	Liu
Current position	Deputy Head of Academy
Current institution(s)/site(s), country	1. Academy of Advanced Interdisciplinary Studies, Wuhan University, China 2. School of Water Resources and Hydropower Engineering, Wuhan University, China
Identifiers/ORCID	ORCID-ID: https://orcid.org/0000-0003-1006-7842

Qualifications and Career

Stages	Periods and Details
Degree Programme	<p>Degree 1: Bachelor of Science Subject: Information and Computational Science Period: 09/2001 – 07/2005 Place: School of Mathematics and Statistics, Central South University Country: China</p> <p>Degree 2: Master of Engineering Subject: Geotechnical Engineering Period: 09/2005 – 01/2008 Place: School of Civil Engineering and Mechanics, Huazhong University of Science and Technology Country: China</p>
Doctorate	<p>Date: 10/2013 Supervisors: Prof. Fook-Hou Lee, Prof. Ser-Tong Quek Subject: Geotechnical Engineering Institution: National University of Singapore Country: Singapore</p>
Stages of academic/professional career	<ol style="list-style-type: none"> 11/2013 – 02/2018: Postdoctoral Research Fellow, Department of Civil and Environmental Engineering, National University of Singapore, Singapore. 03/2018 – present: Professor, School of Water Resources and Hydropower Engineering, Wuhan University, China. 04/2024 – present: Professor, Academy of Advanced Interdisciplinary Studies, Wuhan University, China. 09/2019-10/2019: Visiting scholar, Institute for Risk and

	<p>Reliability, Leibniz University Hannover</p> <p>5. 10/2019-11/2019: Visiting scholar, Department of Civil and Systems Engineering, John Hopkins University</p> <p>6. 07/2025-08/2025: Visiting scholar, Department of Civil and Environmental, National University of Singapore, Singapore</p>
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Supplementary Career Information

N/A

Activities in the Research System (Selected)

Editor-in-Chief: Hydropower

Associate Editor: Innovative Infrastructure Solutions
Smart Construction and Sustainable Cities

Supervision of Researchers in Early Career Phases

Supervision of 12 doctoral students who have successfully gained their doctoral degrees:

1. Ding, Yanan, PhD, Risk assessment approaches of landslide-induced surges considering spatial randomness of soil properties, supervised from 2018-09 to 2021-06.
2. Chen, Guan, PhD, Near-field pulse-type seismic ground motion simulation and engineering applications, supervised from 2018-09 to 2021-06.
3. Li, Kaiqi, PhD, Uncertainty quantification of hydro-thermal parameters of geomaterials based on multi-scale theory and artificial freezing engineering, supervised from 2019-09 to 2022-06.
4. Wang, Fangtong, PhD, Small-strain stiffness and pre-failure deformation behaviour of swelling soils and prediction modelling, supervised from 2019-09 to 2022-12.
5. Wang, Manyu, PhD, Seepage deformation and slope stability considering soil heterogeneity, supervised from 2019-09 to 2022-12.
6. Fang, PeiPei, PhD, Spatial variability characterization of soil parameters and seepage analysis of embankment foundation, supervised from 2020-09 to 2023-06.
7. Ouyang, Jiayi, PhD, Probabilistic back-analysis of slope geotechnical parameters based on multi-source site information, supervised from 2020-09 to 2023-12.
8. Chen, Xuejian, PhD, Face stability and ground settlement induced by face failure during shield tunnelling considering soil spatial variability, supervised from 2020-09 to 2023-12.
9. Li, Yang, PhD, Research on numerical algorithms and evolutionary process of landslide-induced waves near reservoirs, supervised from 2020-09 to 2024-06.
10. Wang, Ruohan, PhD, Seepage failure mechanisms and tunnelling behaviour of tunnel shield based on random field theory, supervised from 2021-09 to 2024-12.
11. Cheng, Po, PhD, Dynamic damage evolution and instability mechanism of layered rock slope in cold regions, supervised from 2021-09 to 2025-6.
12. Liu, Manman, PhD, Investigations on rock damage characteristics and slope stability under freeze-thaw cycles, supervised from 2021-09 to 2025-9.

Supervision of five PhD candidates pursuing their doctorate degrees:

13. Chen, Qimin, PhD candidate, Research topic: Stability and hazard prevention of slopes in cold regions, supervised since from 2022. (Doctorate in progress)

14. Kang, Qing, PhD candidate, Research topic: Risk assessment and mitigation of seepage failure in earth-rockfill dams, supervised since 2022. (Doctorate in progress)
15. Chen, Zhexing, PhD candidate, Research topic: Seismic site effect analysis, supervised since 2023. (Doctorate in progress)
16. Ren, Shunping, PhD candidate, Research topic: Dynamic response and failure mechanisms of anti-dip rock slopes with alternating soft-hard layers, supervised since 2025. (Doctorate in progress)
17. Meng, Tianqi, PhD candidate, Research topic: Mechanisms of seepage and leakage in deep-buried water conveyance tunnels, supervised since 2025. (Doctorate in progress)

Scientific Results

Category A – Articles in peer-reviewed journals, contributions to peer-reviewed conferences or to anthology volumes, and book publications

1. Liu Y.; Lee F. H.; Quek S. T.; Beer M. Modified linear estimation method for generating multi-dimensional multi-variate Gaussian field in modelling material properties. *Probabilistic Engineering Mechanics*, 2014, 38: 42–53. DOI: 10.1016/j.probengmech.2014.09.001.
2. Liu Y.; Chen X. J.; Hu M. Three-dimensional large deformation modelling of landslides in spatially variable and strain-softening soils subjected to seismic loads. *Canadian Geotechnical Journal*, 2023, 60: 426–437. DOI: 10.1139/cgj-2022-0106.
3. Chen E. J.; Ding L. Y.; Liu Y.; Ma X.; Skibniewski M. J. On spectral representation method and Karhunen–Loève expansion in modelling construction material properties. *Archives of Civil and Mechanical Engineering*, 2018, 18(3): 768–783. DOI: 10.1016/j.acme.2017.12.008.
4. Ouyang J. Y.; Li D. Q.; Tang X. S.; Liu Y. A patching algorithm for conditional random fields in modelling material properties. *Computer Methods in Applied Mechanics and Engineering*, 2021, 377: 113719. DOI: 10.1016/j.cma.2021.113719.
5. Ouyang J. Y.; Liu Y. Model updating for slope stability assessment in spatially varying soil parameters using multi-type observations. *Mechanical Systems and Signal Processing*, 2022, 171: 108906. DOI: 10.1016/j.ymssp.2022.108906.
6. Liu Y.; Hu J.; Wei H.; Saw A.-L. A direct simulation algorithm for a class of beta random fields in modelling material properties. *Computer Methods in Applied Mechanics and Engineering*, 2017, 326: 642–655. DOI: 10.1016/j.cma.2017.08.001.
7. Liu Y.; Shields M. A direct simulation method and lower-bound estimation for a class of gamma random fields with applications in modelling material properties. *Probabilistic Engineering Mechanics*, 2017, 47: 16–25. DOI: 10.1016/j.probengmech.2017.01.001.
8. Chen G.; Liu Y.; Ma Z.; Yang J.; Beer M.; Chian S. C.; Wei S. Assessing extent of building damage following an earthquake: case study of the 2023 Turkey–Syria doublet. *npj Natural Hazards*, 2025, 2: 51. DOI: 10.1038/s44304-025-00101-7. (open access)
9. Li K. Q.; Liu Y.; Yin Z. Y. An improved 3D microstructure reconstruction approach for porous media. *Acta Materialia*, 2023, 242: 118472. DOI: 10.1016/j.actamat.2022.118472.
10. Chen G.; Beer M.; Liu Y. Modeling response spectrum compatible pulse-like ground motion. *Mechanical Systems and Signal Processing*, 2022, 177: 109177. DOI: 10.1016/j.ymssp.2022.109177.

Category B – Any other form of published results

1. **Conference paper:** Yong Liu, Ser-Tong Quek & Fook-Hou Lee (2013). Estimating correlation structure of non-Gaussian stationary translation processes, Proceedings of 11th International Conf. on Structural Safety and Reliability (ICOSSAR 2013) (pp. 2833-2840).
2. **Conference paper:** Guan Chen, Yong Liu & Michael Beer (2022). Frequency comparison of the pulse-like and non-pulse ground motions. In Proceedings of 8th international symposium on reliability engineering and risk management (ISRERM2022) (pp. 277-281).
3. **Chinese Patent:** Highway Slope Monitoring and Early-Warning System and Device Based on Digital Twin Technology. Yong Liu et al. (1/10), China Patent No. ZL202211300070.X, granted.
4. **Chinese Patent:** Method for Memoryless Transformation of Non-Gaussian Random Fields Generated by Gamma Random Fields. Yong Liu et al. (1/10), China Patent No. ZL202110935610.0, granted.
5. **Software Copyright:** 3D Random Field Simulation Software Based on Modified Linear Estimation Method (MLE3D). Yong Liu; Registration No. 2021SR1934098, full rights obtained, 2021.
6. **Technical Standard:** Standard for Risk Survey and Process Control on Construction Project, Yong Liu (16/35), T/CCES 59-2025, Chinese Association of Civil Engineering, 1 Aug. 2025.
7. **Technical Standard:** Guidelines for Preventing Slope Instability at the Tunnel Inlet and Outlet of the Middle Route of the South-to-North Water Diversion Project. Team contribution, Yong Liu (4/17), DB13/T 5607-2022, Hebei Water Resources Department, 11 July 2022.

Academic Distinctions (Selected)

1. **Keynote Speech:** Uncertainty Quantification and Propagation in Geotechnical Engineering. Yong Liu; 5th Workshop on Civil and Environmental Engineering, Singapore, 24–27 July 2025.
2. **Keynote Speech:** Advances in Uncertainty Quantification of Geotechnical Problems. Yong Liu; GeoChina 2021, Nanchang, China, 18–19 September 2021.
3. **Award:** National High-Level Overseas Talent Introduction Program (Youth Project). Recipient: Yong Liu (1/1), 2017.
4. **Award:** First Prize of Natural Science Award of Hainan Province. Contribution to the project “Digital Characterization Theory and Methods for Heterogeneity of Geotechnical Materials”. Team contribution (1/7), Hainan Provincial People's Government, 2024.
5. **Award:** Second Prize of Science and Technology Progress Award of Hubei Province. Contribution to the project “Risk Prevention and Control Theory and Key Technologies for Artificial Freezing in Tunnel Construction through Water-Rich Strata”. Team contribution (1/10), Hubei Provincial People's Government, 2024.
6. **Award:** Huang Wenxi–Chen Zongji Rock and Soil Mechanics Award. Recipient: Yong Liu (1/1). Chinese Society of Theoretical and Applied Mechanics, 2023.

Other Information

N/A