

Curriculum Vitae

Yutao Pan

Affiliation: Associate Professor, Department of Civil & Environmental Engineering,
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Gender: Male

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Research Areas

- Ground improvement
- Seepage Analysis
- Deep excavation
- Risk analysis
- Non-uniformity of geomaterials

Biography

I am currently an associate professor on geotechnical engineering in Department of Civil and Environmental Engineering, Norwegian University of Science and Technology (NTNU). I obtained my bachelor and MSc degrees in Huazhong University of Science and Technology (HUST) in 2010 and 2012, respectively. In 2016, I earned my PhD degree on Geotechnical Engineering in National University of Singapore (NUS), following which I worked as a research fellow. In 2020, I joined NTNU as an associate professor. My research interest is on uncertainties in soils and constructions and their impact on the system reliability of geotechnical structures.

Qualifications

- BENG (2010), Huazhong University of Science and Technology, Wuhan, China. (First Prize in Bachelor's thesis in Hubei Province). Major: Civil Engineering
- MEng (2012), Huazhong University of Science and Technology, Wuhan, China. Major: Geotechnical engineering (Supervisor: Professor Jun-jie Zheng)
- PhD (2016), National University of Singapore, Singapore. Major: geotechnical engineering. (with full scholarship from NUS) (Supervisors: Professor Fook-Hou Lee; Professor Kok-Kwang Phoon)
- Postdoc (2016 -2020) National University of Singapore, Singapore.
- Associate Professor (2020-) Norwegian University of Science and Technology (NTNU), Norway. (with tenure)

Research Projects

- Green Shift and a Digital Future, Center for Green Shift in the Built Environment hosted by the Department of Civil and Environmental Engineering. (2021-2024)
Project title: Data-driven multi-disciplinary diagnosis and solution for settlement-induced railway damage.

Task: Package Leader

1 PhD to be hired.

- National Research Foundation Singapore under its Competitive Research Programme (CRP award no. NRF-CRP 6-2010-03), Singapore. Project title: *Enabling technologies for large-scale urban subterranean space exploitation in soft soil conditions*. Aug. 2011 – Jul. 2016. (Participated)
- Land Transport Innovation Fund, Land and Transportation Authority (LTA), Singapore. Project title: *Optimised design of ground improvement schemes for tunnels and earth retaining stabilizing structures*. Jul. 2016 – Dec. 2017. (Participated)
- Open Funding of Shan'xi Key Laboratory of Concrete Structure and Durability
Project title: *Effect of Geometric Imperfection on the Watertightness of Diaphragm Walls*. 2019-2021. (Project Investigator)
Task: Project Investigator
Funding: 20,000 CNY
- NRF-NSFC joint grant: (Singapore and China).
Project title: *Sinkhole risk assessment for tunnelling in complex geological conditions using big data analysis*. 2019-2021 (Actual **drafter** and participator).
Task: Numerical Modelling and Reliability Assessment
Funding: 500,000 SGD
- Defence Science and Technology Agency (Singapore) Grant
Project title: *Cement-stabilization of sludge found in Changi reclaimed land for runway foundation*. 2019-2021 (Participator).
Task: Lab Testing and Numerical Modelling
Funding: 1000,000 SGD

Patent (in China)

- Wang W., Liu Y., Pan Y. et al. (2016). A concrete lattice wall and its correspondent construction procedures based on building information method (BIM). China Patent, Grant No.: ZL201610961651.6. Issued: 14 August. 2018. (in Chinese).

Professional Membership

- ISSMGE: Member (TC219: Nominated Member; TC304: Corresponding Member)
- American Society of Civil Engineers: Associate Member
- Norwegian Geotechnical Society (NGF): Member
- Geotechnical Society of Singapore (GEOSS): Member

Selected Reviewer Experience

- Acta Geotechnica
- Canadian Geotechnical Journal
- Tunnelling and Underground Space Technology
- Computers and Geotechnics
- International Journal of Geomechanics
- Computers and Geosciences

Teaching Experiences

- 2013 - 2015. Teaching Assistant in the National University of Singapore. Teaching courses: Constitutive Modelling; Soil Mechanics; Earth Retaining Structures.
- 2011. Supervised two students of their final year projects, Huazhong University of Science and Technology.
- 2013 -2019. Supervised four final year project students, National University of Singapore.
- 2019-2020. Volunteer Tutor in National University of Singapore. Teaching courses: Constitutive Modelling; Soil Mechanics.
- 2020-now, Associate Professor in Norwegian University of Science and Technology. Teaching course: Geohazards and Risk Assessment.

Selected Publications (* = Corresponding Author)

1. **Pan, Y. ***, Liu, Y., Lee, F. H., & Phoon, K. K. (2019). Analysis of Cement-treated Soil Slab for Deep Excavation Support – A Rational Approach. *Géotechnique*, 69(10), pp. 888-905
2. **Pan, Y.**, Liu, Y. *, & Chen, E. J. (2019). Probabilistic investigation on defective jet-grouted cut-off wall with random geometric imperfections. *Géotechnique*, 69(5), pp. 420–433.
3. **Pan, Y.**, Liu, Y. *, Tyagi, A., Lee, F. H., & Li, D. Q. (2020). Model-Independent Strength-Reduction Factor for Effect of Spatial Variability on Tunnel with Improved Soil Surrounds. *Géotechnique*, (Accepted)
4. Zhang, W., **Pan, Y.***, & Bransby, F. (2020). Scale effects during cone penetration in spatially variable clays. *Géotechnique*, (Accepted)
5. **Pan Y.T.**, Liu Y.*, Hu J., Sun M.M., Wang W. 2017. Probabilistic investigations on the watertightness of jet-grouted ground considering geometric imperfections in diameter and position. *Canadian Geotechnical Journal*, 54(10), 1447-1459.
6. Liu, Y., **Pan, Y.***, Sun, M., Hu, J., & Yao, K. (2017). Lateral compression response of overlapping jet-grout columns with geometric imperfections in radius and position. *Canadian Geotechnical Journal*, 55(9), 1282-1294.
7. Shi, G., **Pan, Y.***, Sun, Z. H., Liu, Y., & Lee, F. H. (2019). Characteristic strength of soils underlying foundations considering the effect of spatial variability. *Canadian Geotechnical Journal*, (Accepted)
8. Tyagi, A. *, Liu, Y., **Pan, Y. T.**, Ridhwan, K. B. M., & Lee, F. H. (2018). Stability of Tunnels in Cement-Admixed Soft Soils with Spatial Variability. *Journal of Geotechnical and Geoenvironmental Engineering*, 144(12), 06018012.
9. Tyagi, A., Liu, Y., **Pan, Y. T.**, & Lee, F. H. (2020). Equivalent Strength for Tunnels in Cement-Admixed Soil Columns with Spatial Variability and Positioning Error. *Journal of Geotechnical and Geoenvironmental Engineering*, 146(10), 04020101.
10. **Pan, Y. T.**, Yao, K., Phoon, K. K., & Lee, F. H. (2019). Analysis of Tunneling through Spatially-Variable Improved Surrounding-A Simplified Approach. *Tunnelling and Underground Space Technology*, (Accepted)
11. **Pan, Y.**; Hicks, M. A.; Broere, W. (2020) An efficient transient - state algorithm for evaluation of leakage through defective cutoff walls. *International journal for numerical and analytical methods in geomechanics* (Accepted).
12. **Pan, Y.**, Shi, G. *, Liu, Y., & Lee, F. H. (2018). Effect of spatial variability on performance of cement-treated soil slab during deep excavation. *Construction and Building Materials*, 188, 505-519.
13. **Pan, Y.**, Liu, Y. *, Xiao, H., Lee, F. H., & Phoon, K. K. (2018). Effect of spatial variability on short-and long-term behaviour of axially-loaded cement-admixed marine clay column. *Computers and Geotechnics*, 94, 150-168.
14. **Pan, Y.**, Yi, J. *, Goh, S. H., Hu, J., Wang, W. & Liu, Y. (2019). A three-dimensional algorithm for estimating water-tightness of cement-treated ground with geometric imperfections. *Computers and Geotechnics*, (Accepted)

15. **Pan, Y. T.***, Xiao, H. W., Lee, F. H., & Phoon, K. K. (2016). Modified isotropic compression relationship for cement-admixed marine clay at low confining stress. *Geotechnical Testing Journal*, 39(4), 695-702.
16. **Pan, Y.**, & Fu, Y. (2020). Effect of random geometric imperfections on the water-tightness of diaphragm wall. *Journal of Hydrology*, 580, 124252.
17. Yi, J. T., **Pan, Y. T.***, Huang, L. Y., Xu, S. J., Liu, Y., & Phoon, K. K. (2020). Determination of limiting cavity depths for offshore spudcan foundations in a spatially varying seabed. *Marine Structures*, 71, 102723.
18. Yi, J. T., **Pan, Y. T.***, Qiu, Z. Z., Liu, F., Zhang, X. Y., & Zhang, L. (2020). The post-installation consolidation settlement of jack-up spudcan foundations in clayey seabed soils. *Computers and Geotechnics*, 123, 103611.
19. Zhang, Z. *, **Pan, Y.**, Zhang, M., Lv, X., Jiang, K., & Li, S. (2020). Complex variable analytical prediction for ground deformation and lining responses due to shield tunneling considering groundwater level variation in clays. *Computers and Geotechnics*, 120, 103443.
20. Zheng, J. J., Liu, Y. *, **Pan, Y. T.**, & Hu, J. (2018). Statistical Evaluation of the Load-Settlement Response of a Multicolumn Composite Foundation. *International Journal of Geomechanics*, 18(4), 04018015.
21. Hu, J., Liu, W., **Pan, Y. ***, & Zeng, H. (2019). Site Measurement and Study of Vertical Freezing Wall Temperatures of a Large-Diameter Shield Tunnel. *Advances in Civil Engineering*, (accepted).
22. Wang, L., Liu, Y., **Pan, Y. ***, Kumarasamy, J., Danovan, W., Lee, F. H. (2019). Some Measures for Reducing Upheave-Induced Hogging of Cement-Treated Soil Layers in Deep Excavations in Soft Clay. *KSCE Journal of Civil Engineering*, (accepted).
23. Shi, G., Chen G., **Pan, Y.***, Yang X. L., Liu Y., Dai, G. Z. (2019). Stress-drop effect on brittleness evaluation of rock materials. *Journal of Central-South University*, 26(7): 1807-1819. doi: <https://doi.org/10.1007/s11771-019-4135-2>.
24. Yao, K., **Pan, Y. T.**, Jia, L., Yi, J. T.* and Hu, J. (2019). Strength evaluation of marine clay stabilized by cementitious binder, *Marine Georesources & Geotechnology*, (accepted).
25. Dai, G., Sheng, Y., **Pan, Y. ***, Shi, G., & Li, S. (2020). Application of a Bentonite Slurry Modified by Polyvinyl Alcohol in the Cutoff of a Landfill. *Advances in Civil Engineering*, 2020.

International Conference Papers (# = Presentation Author)

26. **Pan, Y. #**, & Lee, F. H. (2019). Effect of spatial variability on undrained behaviour of tunnel with improved surroundings, 13th International Conference on Applications of Statistics and Probability in Civil Engineering, May 26-30, 2019, Seoul, South Korea
27. **Pan, Y. #**, Lee, F. H., Liu, Y., & Xiao, H. (2016). Effect of spatial variability on undrained triaxial test of cement-admixed soil. 15th asian regional conference on soil mechanics and geotechnical engineering, Fukuoka, Japan.