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Research Assistant Professor in Geotechnical Engineering
Department of Civil and Environmental Engineering
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Academic Qualifications

The Hong Kong Polytechnic University, Hong Kong, China, August 2013 – August 2019

Ph.D. in Geotechnical Engineering

Huazhong University of Science and Technology, Wuhan, China, September 2009 – June 2013

B.Eng. in Civil Engineering

Academic Positions Held

The Hong Kong Polytechnic University, October 2020 – present

Research Assistant Professor, Department of Civil and Environmental Engineering

The Hong Kong Polytechnic University, January 2020 – September 2020

Postdoctoral Fellow, Department of Civil and Environmental Engineering

The Hong Kong Polytechnic University, June 2019 – December 2019

Research Associate, Department of Civil and Environmental Engineering

The Hong Kong Polytechnic University, January 2017 – May 2019

Research Assistant, Department of Civil and Environmental Engineering

Research Interests

- Laboratory testing for soil behavior
 - Resilient and permanent deformations of granular soils
 - Time-dependent deformation of granular soils considering particle crushing
- Novel developments of testing apparatus
- Geoenvironmental engineering
 - Contaminated soft soil improvement by deep mixing with cement and fly ash
- Smart monitoring
 - Application of optical fiber sensing and 3D printing technologies in geostructure monitoring
- Sustainable material
 - Sea-sand seawater concrete FRP piles in marine soils
 - Shearing behavior of Soil-FRP interface

Publications

Journal papers published / in press

1. **Chen, W.-B.**, Feng, W.-Q., Yin, J.-H., and Qin, J.-Q. (2020). New FBG-based device for measuring small and large radial strains in triaxial apparatus. *Canadian Geotechnical Journal*, <https://doi.org/10.1139/cgj-2020-0145>.
2. **Chen, W.-B.**, Liu, K., Feng, W.-Q., and Yin, J.-H. (2020). Partially drained cyclic behaviour of granular fill materials in triaxial condition. *Soil Dynamics and Earthquake Engineering*, 139, 106355. <https://doi.org/10.1016/j.soildyn.2020.106355>
3. Ho, T.O., Tsang C.W., **Chen, W.-B.**, and Yin, J.-H. (2020). Evaluating the environmental impact of contaminated sediment column stabilized by deep cement mixing. *Chemosphere*, 261, 127755. DOI: 10.1016/j.chemosphere.2020.127755
4. **Chen, W.-B.**, Feng, W.-Q., Yin, J.-H., Chen, J.-M., Borana, L., and Chen, R.-P. (2020). A new model for predicting permanent strain of granular materials subjected to cyclic loadings. *Journal of Geotechnical and Geoenvironmental Engineering*, 146(9): 04020084. DOI: 10.1061/(ASCE)GT.1943-5606.0002334
5. Feng, W.-Q., Tan, D.-Y., Yin, J.-H., Qin, J.-Q., and **Chen, W.-B.** (2020). Experimental and numerical studies on the performances of stone column and sand compaction pile reinforced Hong Kong marine deposits. *International Journal of Geomechanics*. DOI: 10.1061/(ASCE)GM.1943-5622.0001739
6. Liu, K., Yin, J.-H., **Chen, W.-B.**, Feng, W.-Q., and Zhou, C. (2020). Critical state parameters for an unsaturated granular fill material. *Acta Geotechnica*. DOI: 10.1007/s11440-020-00973-1
7. **Chen, W.-B.**, Feng, W.-Q., and Yin, J.-H. (2020). Effects of water content on resilient modulus of a granular material with high fines content. *Construction and Building Materials*, 236, 117542. DOI: 10.1016/j.conbuildmat.2019.117542
8. **Chen, W.-B.**, Feng, W.-Q., Yin, J.-H., and Borana, L. (2020). LVDTs-based radial strain measurement system for static and cyclic behavior of geomaterials. *Measurement*, 155, 107526. DOI: 10.1016/j.measurement.2020.107526
9. **Chen, W.-B.**, Liu, K., Feng, W.-Q., Borana, L., and Yin, J.-H. (2020). Influence of matric suction on nonlinear time-dependent compression behavior of a granular fill material. *Acta Geotechnica*, 15, 615–633. DOI: 10.1007/s11440-018-00761-y
10. **Chen, W.-B.**, Liu, K., Yin, Z.-Y., and Yin, J.-H. (2020). Crushing and flooding effects on one-dimensional time-dependent behaviors of a granular soil. *International Journal of Geomechanics*, 20(2), 04019156. DOI: 10.1061/(ASCE)GM.1943-5622.0001560
11. Feng, W.-Q., Yin, J.-H., **Chen, W.-B.**, Tan, D.-Y., and Wu, P.-C. (2020). Development and performance of new simplified method for soft soil with creep under multi-staged loading. *Marine Georesources & Geotechnology*, 1-17. DOI: 10.1080/1064119X.2019.1711472
12. Feng, W.-Q., Yin, J.-H., **Chen, W.-B.**, Tan, D.-Y., and Wu, P.-C. (2020). A new simplified method for calculating consolidation settlement of multi-layer soft soils with creep under multi-stage ramp loading. *Engineering Geology*, 264, 105322. DOI: 10.1016/j.enggeo.2019.105322
13. Feng, W.-Q., Zheng, X.-C., Yin, J.-H., **Chen, W.-B.**, and Tan, D.-Y. (2020). Case study on long-term ground settlement of reclamation project on clay deposits in Nansha of China. *Marine Georesources*

& *Geotechnology*, 1-16. DOI: 10.1080/1064119X.2019.1704319

14. **Chen, W.-B.**, Feng, W.-Q., Yin, J.-H., Borana, L., and Chen, R.-P. (2019). Characterization of permanent axial strain of granular materials subjected to cyclic loading based on shakedown theory. *Construction and Building Materials*, 198, 751-761. DOI: 10.1016/j.conbuildmat.2018.12.012
15. **Chen, W.-B.**, Yin, J.-H., and Feng, W.-Q. (2019). A new double-cell system for triaxial testing a soil specimen with small strain measurement under monotonic or cyclic loading. *Acta Geotechnica*, 14(1), 71-81. DOI: 10.1007/s11440-018-0629-6
16. Tan, D.-Y., Yin, J.-H., Feng, W.-Q., Zhu, Z.-H., Qin, J.-Q., **Chen, W.-B.** (2019). New simple method for calculating impact force on flexible barrier considering partial muddy debris flow passing through. *Journal of Geotechnical and Geoenvironmental Engineering*, 145(9), 04019051. DOI: 10.1061/(ASCE)GT.1943-5606.0002133
17. Wu, P.-C., Yin, J.-H., Feng, W.-Q., and **Chen, W.-B.** (2019). Experimental study on a geosynthetic-reinforced sand fill over marine clay with or without deep cement mixed soil columns under different loadings. *Underground Space*. 4(4), 340-347. DOI: 10.1016/j.undsp.2019.03.001
18. **Chen, W.-B.**, Yin, J.-H., Feng, W.-Q., Borana, L., and Chen, R.-P. (2018). Accumulated permanent axial strain of a subgrade fill under cyclic High-Speed Railway loading. *International Journal of Geomechanics*, 18(5), 04018018. DOI: 10.1061/(ASCE)GM.1943-5622.0001119
19. Shi, X.S., Yin, J.-H., Feng, W.-Q., and **Chen, W.-B.** (2018). A creep model for time-dependent behavior of saturated sand-bentonite mixtures in oedometer condition within homogenization framework. *International Journal of Geomechanics*, 18(12), 04018159. DOI: 10.1061/(ASCE)GM.1943-5622.0001295
20. Feng, W.-Q., Yin, J.-H., Tao, X.-M., Tong, F., and **Chen, W.-B.** (2016). Time and strain-rate effects on the viscous stress-strain behavior of a plasticine material. *International Journal of Geomechanics*, 17(5), 04016115. DOI: 10.1061/(ASCE)GM.1943-5622.0000806

Conference papers

1. Feng, W.-Q., Zheng, X.-C., Yin, J.-H., **Chen, W.-B.**, and Tan, D.-Y. (2019). Ground settlement problem analysis of a reclamation project in Nansha of China. *International Conference on Silk-road Disaster Risk Reduction and Sustainable Development*, Beijing, China.
2. Yin, J.-H., **Chen, W.-B.**, Feng, W.-Q., and Borana, L. (2018). Characterization and prediction of accumulated permanent strain of granular materials under cyclic loading. *The 16th Symposium on Earthquake Engineering*, Roorkee, India.
3. Liu, K., **Chen, W.-B.**, Borana, L., and Yin, J.-H. (2018). Experimental study on the effect of matric suction on the behavior of a compacted granular silty soil. *The 7th International Conference on Unsaturated Soils*, Hong Kong, China.
4. **Chen, W.-B.**, Yin, J.-H., Borana, L., and Feng, W.-Q. (2017). Experimental investigation on settlement and stress-strain behavior of fills under saturated and unsaturated conditions. *Geotechnical Frontiers 2017*, Orlando, USA.

Research Projects

1. PTeC Project: *Technical study on application of optical fiber sensing technology in monitoring of masonry retaining walls, stonewall trees and large trees*
No.: P19-0234 Funding: HK\$ 2,977,000 PI: Prof. Jianhua Yin
Main Participant, February 2020 – present

2. RGC-RIF: *Study of super-fast large-area economical marine reclamations for housing and infrastructural developments in the Guangdong-Hong Kong-Macau GBA*
No.: R5037-18 Funding: HK\$ 14,108,800 PC: Prof. Jianhua Yin
Main Participant, June 2019 – present

3. RGC-GRF: *Test study of sea-sand seawater concrete FRP piles in marine soils under cyclic and static loading*
No.: 15220917 Funding: HK\$ 582,000 PI: Prof. Jianhua Yin
Main Participant, January 2018 – present

4. RISUD Project: *Study on contaminated soft soil improvement by deep mixing with cement and fly ash*
PI: Prof. Jianhua Yin
Main Participant, August 2016 – present

5. 973 project: *山区支线机场高填方变形和稳定控制关键基础问题研究 (Fundamental research on deformation and stability control of high embankments in mountain nonhub airports)*
No.: 2014CB047000 Funding: RMB\$ 30,000,000 PC: Prof. Yangping Yao (BUAA)
Main Participant, January 2014 – December 2017

6. NSFC: *高速铁路无砟轨道路基长期动力稳定性及基于极限状态法的设计方法研究 (Long-term dynamic stability of ballastless track subgrade for High-Speed Railway and design method based on limit states)*
No.: U1234204 Funding: RMB\$ 2,700,000 PI: Prof. Renpeng Chen (ZJU&HNU)
Main Participant, August 2013 – December 2016

Teaching Ability

- **Soil Mechanics**
- **Soil Laboratory Testing**
- **Advanced Geotechnical Design**
- **Soil Behaviour and Geotechnical Modelling**

Teaching and Supervision Experiences

- **Tutor, The Hong Kong Polytechnic University, August 2013 – present**
 - undergraduate course *Advanced Geotechnical Design* (CSE40410)
 - postgraduate course *Soil Behaviour and Geotechnical Modelling* (CSE538)
- **Supervisor, The Hong Kong Polytechnic University, August 2013 – present**

- Supervised 2 summer interns
- Supervised 12 Final Year Projects of undergraduate students
 - Student name: Yiu Sum Yu (2014/2015)
Project title: *Test study on the stress-strain behavior of a local soil with small strain measurement*
 - Student name: Kin Yiu Lee (2014/2015)
Project title: *Test study on the cyclic stress-strain behavior of subbase soil with small strain measurement*
 - Student name: Chun Wa Wong (2015/2016)
Project title: *Triaxial test study on the stress-strain behavior of a fill in saturated and unsaturated conditions used in an airport*
 - Student name: Yan Fai Yiu (2015/2016)
Project title: *Oedometer test study on the stress-strain behavior of a fill in saturated and unsaturated conditions used in an airport project*
 - Student name: Ka Chun Law (2016/2017)
Project title: *Triaxial test study on the stress-strain behavior of a fill in saturated and unsaturated conditions used in an airport*
 - Student name: Ka Hei Chan (2018/2019)
Project title: *Analysis of consolidation settlements of n-layers of soils exhibiting creep with vertical drains using a simplified method and a finite element method considering multi-staged loading and unloading*
 - Student name: Chun Hing Chan (2019/2020)
Project title: *Experimental study on the effect of particle breakage on macroscopic properties of granular soils under triaxial compression tests*
 - Student name: Chung Heng Koo (2019/2020)
Project title: *Experimental study on the effects of particle morphology and mineral composition on 1-D behaviors of granular soils under constant-rate-of-strain tests*
 - Student name: Tsz Yeung Lam (2019/2020)
Project title: *An FBG-based measuring system fabricated using 3D printing technique for small-strain measurement in triaxial test*
 - Student name: Shu Ping Lam (2019/2020)
Project title: *Experimental study on the shear behavior of interface between Fiber-reinforced Polymer and sands*
 - Student name: Siu Hang Tam (2019/2020)
Project title: *Stress-path triaxial tests with small-strain measurement on intact and remoulded soil samples*
 - Student name: Siu Sum Kan (2019/2020)
Project title: *Study on the mechanical characteristic of tailings material and its application in reclamation projects*

Consultancy Services

1. Project: *Special triaxial tests with small-strain measurement for depressed road project in Central Kowloon Route - Kai Tak West (Client: Gammon Construction Ltd.)*
Person in charge, July 2019 – present
2. Project: *Additional conventional and modified oedometer tests for Tung Chung New Town Extension – reclamation and advance works (Client: Build King – SCT Joint Venture)*
Person in charge, March 2019 – June 2019
3. Project: *Large-size Rowe cell tests for the Third Runway of Hong Kong International Airport (Client: Fugro Technical Services Ltd.)*
Person in charge, October 2017 – March 2018
4. Project: *A physical model test on bentonite slurry improved by vertical drains subjected to vacuum preloading (Client: China Harbour HK)*
Person in charge, October 2017 – August 2017
5. Project: *Anisotropic-consolidated undrained triaxial tests and constant rate-of-strain oedometer test for Tuen Mun-CLK Link Northern Connection Sub-sea Tunnel Sections (Client: MaterialLab Consultants Ltd.)*
Person in charge, June 2017 – August 2017
6. Project: *Consolidated undrained triaxial compression test and consolidated undrained creep test For HKBCF to Tuen Mun Tunnel Link Project (Client: Dragages Hong Kong)*
Participant, April 2017 – January 2018
7. Project: *Consolidated undrained triaxial compression tests on Kaolin and tension test on geotextile (Client: ONLYgeotechnics Ltd.)*
Main Participant, May 2016 – June 2016
8. Project: *Shear box test for grouted soil for Shatin-Central Line Contract 1107 (Client: Chun Wo-SELI Joint Venture)*
Person in charge, July 2014 – April 2015
9. Project: *Special triaxial tests on PCC samples (Client: Sinohydro-Pahaytc Joint Venture SDN BHD)*
Person in charge, June 2014 – August 2014
10. Project: *Consolidated-undrained triaxial tests of the Shenzhen local soils from the excavation of Shenzhen Television Building (Client: Shenzhen Media Group)*
Person in charge, October 2013 – December 2013
11. Project: *Point load and unconfined compression tests on Hong Kong local rock (Client: Hong Kong Housing Authority, GovHK)*
Main Participant, August 2013 – December 2013

Professional Activities

- **Reviewer for international SCI journals:**
 - *Measurement, Elsevier*

- *Engineering Geology, Elsevier*
- *Construction and Building Materials, Elsevier*
- *International Journal of Geomechanics, ASCE*
- *Marine Georesources & Geotechnology, Taylor & Francis*
- *International Journal of Pavement Engineering, Taylor & Francis*
- **Executive Committee Member, The Hong Kong Polytechnic University, May 2019**
 - Assisted in organizing the *ASCE annual One-day Symposium on Reclamation and Resilience in Civil Engineering*
- **Executive Committee Member, The Hong Kong Polytechnic University, September 2016**
 - Assisted in organizing *現代岩土工程新進展研討會 2016*
- **Executive Committee Member, Huazhong University of Science and Technology, April 2012**
 - Assisted in organizing *1st National Conference of Improvement of Dredging- filled Ground*

Awards and Prizes

- **University Research Studentship, September 2013.09 – January 2017**
- **Outstanding Cadres of Student Union, The Excellent Graduate of HUST, 2012/2013**
- **University Merit Student, University Excellent Student Cadre, 2011/2012**
- **University Merit Student, University Excellent Student Cadre, 2010/2011**
- **National Scholarship, Outstanding Freshmen, 2009/2010**

Language Proficiency

- **English:** Professional working proficiency
- **Cantonese:** Professional working proficiency
- **Mandarin:** Native proficiency