

# Chengwu JIANG

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## EDUCATION BACKGROUND

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| <b>08/2022-Present</b>   | <b>PhD Candidate</b>           | <b>Georgia Institute of Technology</b>  |
| <ul style="list-style-type: none"><li>• Supervisor: Prof. Chlo e Arson</li><li>• Topics: Poromechanics</li></ul>                                   |                                |   |
| <b>08/2020-01/2022</b>   | <b>Master of Science</b>       | <b>National University of Singapore</b> |
| <ul style="list-style-type: none"><li>• Major: Geotechnical Engineering, Faculty of Engineering.</li><li>• Overall GPA: 4.65/5.0.</li></ul>        |                                |   |
| <b>09/2016-06/2020</b>   | <b>Bachelor of Engineering</b> | <b>Zhejiang University City College</b> |
| <ul style="list-style-type: none"><li>• Major: Civil Engineering, School of Engineering.</li><li>• Overall GPA: 3.98/4.0 (Ranking 1/68).</li></ul> |                                |   |

## RESEARCH EXPERIENCE

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| <b>09/2021-11/2021</b>  | <b>Research on Using Existing Data to Predict the location of underground rock formations</b>  |
| <i>Research Assistant in Prof. Goh Siang Huat's Group at National University of Singapore (NUS)</i>   |  |
| <ul style="list-style-type: none"><li>• Based on the existing borehole data of Singapore Land Transport Authority, used machine learning and deep learning algorithms to predict the location of underground rock in areas where drilling cannot be carried out.</li><li>• Analyzed the accuracy of the existing algorithms, and studies the corresponding optimization algorithm.</li></ul>  |  |
| <b>04/2021-11/2021</b>  | <b>Research on Soil Displacement Caused by the Excavation of the Quasi-rectangular Shield</b>  |
| <i>Research Assistant in Prof. Goh Siang Huat's Group at National University of Singapore (NUS)</i>   |  |
| <ul style="list-style-type: none"><li>• Established FEM model using PLAXIS 3D software, researching the laws of soil displacement caused by the excavation of the quasi-rectangular shield tunnel.</li><li>• Analyzed the influence of face pressure, grouting pressure, and other factors.</li></ul>   |  |
| <b>06/2020-10/2020</b>  | <b>Research on Longitudinal Deformation of Shield Tunnel in the side of Foundation Pit with the Consideration of the Retaining Structure Deformation</b> |
| <i>Research Assistant in Prof. WEI Gang's Group at Zhejiang University City College (ZUCC)</i>  |  |
| <ul style="list-style-type: none"><li>• Established a sidewall unloading model which can consider the deformation and the spatial effect of the retaining structure.</li><li>• Analyzed the longitudinal deformation of shield tunnel at the side of the foundation pit with introducing the collaborative deformation model for rotation and dislocation of shield tunnel.</li></ul>   |  |
| <b>11/2019-05/2020</b>  | <b>Construction Monitoring and Analysis of Deep Foundation Pit for Working Well of Shield Tunnel in Soft Soil Area</b>                                   |
| <i>Graduation Thesis Supervised by Prof. WEI Gang at Zhejiang University City College (ZUCC)</i>  |  |
| <ul style="list-style-type: none"><li>• Summarized the design, construction scheme and monitoring scheme of the deep foundation pit.</li><li>• Collected the data of ground and building subsidence around the pit and analyzed the influence of well excavation on the surrounding environment.</li><li>• Analyzed the changing pattern of axial force by summarizing results of monitoring projects conducted by ZUCC and proposed the method of calculating the safety coefficient based on axial force.</li></ul>   |  |
| <b>11/2018-01/2019</b>  | <b>Research on Mechanisms of Multiple Scattering of Elastic Waves Induced by Arbitrary Discontinuous Barriers in Saturated Soils</b>                     |
| <i>Research Assistant in Prof. SUN Miaomiao's group at Zhejiang University City College (ZUCC)</i>  |  |
| <ul style="list-style-type: none"><li>• Obtained the theoretical solutions of plain P waves multiple scattered by arbitrarily arranged infilled cavity rows as barrier in saturated soil, based on Biot's poroelastic theory and the multiple scattering method.</li><li>• Visualized the dimensionless displacement amplitude by 3D graph in MATLAB behind hexagon double-row cavities with variation of interval and row spacing.</li><li>• Determined the most advisable cavity spacing and row spacing for designing barrier to enhance isolation effect.</li></ul> |  |
| <b>11/2017-03/2018</b>  | <b>Research on Soil Deformation Caused by Excavation of Rectangular Shield Tunnel and its Influence on Underground Pipeline</b>                          |

Research Assistant in Prof. WEI Gang's Group at Zhejiang University City College (ZUCC)

- Corrected the computing formula for soil additional stress induced by multi-factor of quasi rectangle shield in consideration of the influence of additional grouting pressure and soil loss.
- Computed various direction additional load variation curves of pipeline above tunnel axis in order to identify the effect of different distance between shield and pipeline on additional load.

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9/2017-11/2017

### Research on Layout and Exploitation of Underground Traffic Space in Singapore

Research Assistant in Prof. SUN Miaomiao's group at Zhejiang University City College (ZUCC)

- Mapped Singapore urban underground expressway network, geographical distribution of commercial centres in Singapore, development process of MRT&LRT in Singapore etc.
- Summarized Singapore railway plan and expressway development, process of MRT&LRT development;
- Analyzed data from public sources and made relation curves of subway numbers, urban GDP and population in Singapore varied with time series.

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### PATENT

- [1] Gang WEI, **Chengwu JIANG**, Yongjie QI, et al. Foundation reinforcement by vacuum precompacting, electroosmosis, heating, and biological enzyme. (Pending)
- [2] Gang WEI, Qiao SUN, Xinhai ZHANG, Junfei HE, **Chengwu JIANG** et al. Construction method of large assembled rectangular pipe jacking segments. (Pending)

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### PUBLICATION

- [1] Wei, Gang, Shiyu Huang, **Chengwu Jiang**, Xingfu Yu, and Xinquan Wang. "Monitoring and analysis of stress and deformation of shield working well excavation in upper soft and lower hard soil layer." Hazard Control in Tunnelling and Underground Engineering 2.4 (2021): 29-36. (In Chinese)
- [2] Zhang, Xinhai, Gang Wei, and **Chengwu Jiang**. "The Study for Longitudinal Deformation of Adjacent Shield Tunnel Due to Foundation Pit Excavation with Consideration of the Retaining Structure Deformation." Symmetry 12.12 (2020): 2103.
- [3] **Jiang, Chengwu**, Gang Wei, Shiyu Huang, Xingfu Yu, and Xinquan Wang. "Analysis of abnormal supporting axial force of foundation pit for shield work shaft in soft clay." Low Temperature Architecture Technology 42.7 (2020): 112-122. (In Chinese)
- [4] **Jiang, Chengwu**, Miaomiao Sun, Xinjiang Wei, Yushi Dong, Xiaotian Wang, and Lianying Zhou. "Analysis on the shielding effect of elastic waves with infilled cavity rows by multiple scattering method." The 16th Asian Regional Conference on Soil Mechanics and Geotechnical Engineering (16ARC) Taiwan, China.
- [5] Sun, Miaomiao, **Chengwu Jiang**, Mengfei Yu, Lianying Zhou, and Siying Mo. "Layout and Exploitation of Underground Traffic Space with City Growth." Chinese Journal of Underground Space and Engineering 15.4 (2019): 980-989. (In Chinese)
- [6] Cai, Shiqi, Gang Wei, **Chengwu Jiang**, and Xinhai Zhang. "Study on Additional Load of Underground Pipeline Caused by Multi-factors of Quasi Rectangle Shield." Low Temperature Architecture Technology 41.3 (2019): 60-64, 88. (In Chinese)

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### AWARDS & HONORS

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| <b>2020</b>       | Excellent Graduate Awards of China Civil Engineering Society, Zhejiang Province and ZUCC. |
| <b>2019</b>       | Excellent Undergraduate Scholarship awarded by Zhejiang Provincial Government.            |
| <b>2018, 2019</b> | The First Undergraduate Scholarship awarded by ZUCC.                                      |
| <b>2018, 2019</b> | The Merit Student Award of ZUCC.  |

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### OTHER INFORMATION

**Technical Skills:** Proficiency with MATLAB/ Python/ R studio/ Plaxis 2D & 3D/ AutoCAD/ Abaqus CAE.

**English Proficiency:** IELTS 7.0 (L:7.5 R:8.0 W:6.5 S:6.0), TOEFL 94 (L:20 R:28 W:25 S:21), GRE Score: 321 (Verbal 152 Quantitative 169)