

# ZHANG, Tianyu (张天宇)

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## Education

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### Georgia Institute of Technology

Atlanta, United States

- Master of Science in Computational Science and Engineering
- GPA: 4.0/4.0

Aug. 2019 - Jan. 2021

### South China University of Technology (Project 211&985, Class A of Double First Class Univ.)

Guangzhou, China

- Bachelor of Engineering in Civil Engineering
- GPA: 3.90/4.00, Ranking: 1/26

Aug. 2015 - Jul. 2019

## Honors & Awards

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- Citation for Outstanding College Graduates, China Civil Engineering Society, 2019 (**only 36 Civil Eng. Graduates awarded in the nation-wide**)
- Zhongtian Excellent Graduation Project Scholarship, South China University of Technology, 2019
- National Scholarship, Ministry of Education of China (awarded for 3 times), 2016, 2017, 2018 (**top 2% across China for 3 years, the only student who awarded for 3 times in the class of 2015**)
- Outstanding Undergraduate International Exchange Program, China Scholarship Council, 2018
- Outstanding Communist Youth League member, South China University of Technology (awarded for 2 times), 2016, 2018
- First prize in China Mechanics Competition in Honor of Zhou Peiyuan (individual competition), The Chinese Society of Theoretical and Applied Mechanics, 2017 (**total score ranked 30<sup>th</sup>/20k+, the first student of SCUT to win the first prize**)
- Third prize in China Mechanics Competition in Honor of Zhou Peiyuan (team competition), The Chinese Society of Theoretical and Applied Mechanics, 2017
- Third prize in Structural Mechanics Competition for Colleges and Universities in South Central Region, The Guangdong Society of Theoretical and Applied Mechanics, 2017
- Merit Student, South China University of Technology (awarded for 2 times), 2016, 2017
- First prize in the National Undergraduate Mathematics Competition in Guangdong province, The Chinese Mathematical Society, 2016 (**top 8%**)
- Second prize in the Guangdong Undergraduate Mechanics Competition, The Guangdong Society of Theoretical and Applied Mechanics, 2016
- Second prize in the SCUT Undergraduate Mathematics Competition, South China University of Technology, 2016

## Publications

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- Feng, Y., Wang, Q., Wu, D., Luo, Z., Chen, X., **Zhang, T.**, & Gao, W. (2021). Machine learning aided phase field method for fracture mechanics. *International Journal of Engineering Science*, 169, 103587.
- Yu, Y., **Zhang, T.**, Wang, Q., Chen, X., Wu, D., Gao, W., & Liu, A. (2021). Sensitivity of solidification hydration model in estimating carbonation of fly ash cement system. *Construction and Building Materials*, 282, 122582.
- Mu, H. Q., Hu, Q., Guo, H. Z., **Zhang, T. Y.**, & Su, C. (2019). Uncertainty quantification of load effects under stochastic traffic flows. *International Journal of Structural Stability and Dynamics*, 19(01), 1940009.
- Mu, H. Q., Guo, H. Z., **Zhang, T. Y.**, & Su, C. (2019). A parametric study of bridge load effect under stochastic vehicular load. *International Journal of Lifecycle Performance Engineering*, 3(1), 77-90.

## Patent

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- Lingzhen Ba, Wei Li, **Tianyu Zhang**. A fast-installed wall system. CN108385895A. Aug 10th, 2018

## Research Experience

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**Surrogate-based optimization for composite laminate under impact loading with XSVR** Jun. 2022 - Present  
*Remote Researcher at The University of New South Wales in Australia. Advisor: Professor Wei Gao* Wuhu, China

- Conducted independent research under the guidance of Professor Wei Gao.
- Implemented surrogate-based optimization routine in MATLAB with extended support vector regression model (XSVR) and mixed-integer genetic algorithms.
- Conducted numerical experiments and paper writing.

**Machine Learning aided phase field method for fracture mechanics** Jun. 2021 - Dec. 2021  
*Remote Researcher at The University of New South Wales in Australia. Advisor: Professor Wei Gao* Wuhu, China

- Implemented 3D phase field fracture model in Abaqus UEL.
- Performed non-deterministic FEM analysis of 3D phase field fracture.

**Phase Field Modeling of Crack Propagation of Brittle and Quasi-brittle Material** Dec. 2020 - Jun. 2021  
*Remote Graduate Researcher. Advisor: Professor Wei Gao* Wuhu, China

- Modeling crack propagation process of brittle and quasi-brittle material with phase field method in COMSOL Multiphysics.
- Conducted numerical experiments to verify the results of journal paper.

**Functional Graded Material Modeling Using ABAQUS User Subroutine (Research Intern)** Jul. 2018 - Oct. 2018  
*Research Intern at the University of New South Wales at Australia; Advisor: Professor Wei Gao* Sydney, Australia

- Developed a quick modeling method for functional graded material with ABAQUS user subroutine USDFLD.
- Conducted verification and validation of the proposed method by comparison with models built with MATLAB.

**Uncertainty Quantification of Load Effects under Stochastic Traffic Flows** Nov. 2017 - Jan. 2018  
*Undergraduate Researcher at SCUT. Advisor: Professor He-Qing Mu* Guangzhou, China

- Implemented a traffic flow model based on Cellular Automaton Theorem in MATLAB.
- Conducted numerical simulations to collect the needed data regarding load effects and visualized the data.
- Conducted paper writing of the model-building part for a proposed journal publication.

**Analysis and Improvement of the Density of Sand Plate in the Techniques of Sand Flow Method for Immersed Tube Tunnels** Sep. 2016 - Sep. 2017  
*Undergraduate Researcher at SCUT. Advisor: Lecturer Ling-Zhen Ba* Guangzhou, China

- Designed and constructed a scale-model experimental system to simulate the process of sand flow method.
- Conducted experiments to produce sand plates and measured the density of sand plate using sand cone method.
- Conducted conclusive report of the project and patent writing.

## Language & Software Skills

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- **TOEFL:** 106 (R29/L27/S24/W26).
- **GRE:** 156+170+3.5
- **Programming Language:** MATLAB, Python, Fortran, C++.
- **Tools:** ABAQUS, LS-DYNA, COMSOL Multiphysics, Latex.

## Leadership & Community Services

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Graduate Teaching Assistant of CS4400 (Intro to Database System), Georgia Tech	May 2020 - Dec. 2020
Volunteer for book management, Guangzhou Municipal Library	Mar. 2018 - May 2018
Member of the 37th Student Representative of SCUT, South China University of Technology	May 2017 - May 2018
Member of the Class Committee, in charge of Study, South China University of Technology	Sep. 2016 - Jul. 2018
Assistant manager of student dormitory, South China University of Technology	Mar. 2016 - Jul. 2016
Member of the team for Enrollment Advertisement, South China University of Technology	Jan. 2016 - Feb. 2016