

ZHANG, Tianyu (张天宇)

Email: jonas.t.zhang@gmail.com

Mobile: +86 13226663616



Education

The University of New South Wales

Remote Research Assistant

Sydney, Australia

Jul. 2021 - Jan. 2023

- Research Topic: Machine Learning aided Computational Mechanics
- Published 3 top journal papers as coauthor.
- Courses: Mathematical Analysis, Advanced Linear Algebra, Real Analysis, Complex Analysis, Functional Analysis.

Georgia Institute of Technology

Master of Science in Computational Science and Engineering

Atlanta, United States

Aug. 2019 - Jan. 2021

GPA: 4.0/4.0

- Courses: Computational Data Analysis (Machine Learning), Computational Sci&Engr Algorithms, Advanced Scientific Computing, Intro to Database System, Computational Problem Solving, Numerical Linear Algebra.

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

Bachelor of Engineering in Civil Engineering

Guangzhou, China

Aug. 2015 - Jul. 2019

GPA: 3.90/4.00, Ranking: 1/26

- Courses: Calculus, Linear Algebra, Probability & Mathematical Statistics, C++ Programming Foundations.

Honors & Awards

- Citation for Outstanding College Graduates, China Civil Engineering Society, 2019 (**only 36 Civil Engineering graduates are conferred nationwide, the only one from SCUT conferred this award in 2019**)
- National Scholarship, Ministry of Education of China (awarded for 3 times), 2016, 2017, 2018 (**top 0.2% across China for 3 years, the only student awarded for 3 times in the class of 2015 at SCUT**)
- First prize in the National Zhou Peiyuan Competition on Mechanics (individual competition), The Chinese Society of Theoretical and Applied Mechanics, 2017 (**top 0.1% in the nation-wide, the first student from SCUT to win the first prize**)
- First prize in the National Undergraduate Mathematics Competition in Guangdong province, The Chinese Mathematical Society, 2016 (**top 5% in the nation-wide**)
- Merit Student, South China University of Technology (awarded for 2 times), 2016, 2017

Publications

- Feng, Y., Wang, Q., Yu, Y., **Zhang, T.**, Wu, D., Chen, X., ... Gao, W. (2023). Experimental-numerical-virtual (ENV) modelling technique for composite structure against low velocity impacts. *Engineering Structures*, 278, 115488. doi:10.1016/j.engstruct.2022.115488
- 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.

Research Experience

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 supervision 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 academic 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

- Modelled 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 academic 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

- **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

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
Director of the Class Drama Presentation, South China University of Technology	Oct. 2015 - Nov. 2015