Tianju Xue (薛添驹)

Ph.D., Princeton University

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Research Interest

Machine Learning; Computational Mechanics; Intelligent Manufacturing

Work Experience

2022-Now   **Postdoctoral Scholar**, *Northwestern University*.
Advisor: Prof. *Jian Cao*

Education

2017–2022   **Ph.D.**, *Princeton University*.
Advisors: Prof. *Sigrid Adriaenssens* and Prof. *Ryan P. Adams*

2013–2017   **B.Sc.**, *Shanghai Jiao Tong University*.
Mechanical Engineering (UM-SJTU Joint Institute), GPA - 3.80/4.0 (ranking 1/53)

2016   **Exchange Student**, *The University of Hong Kong*.
Mechanical Engineering

Peer-reviewed Publications

2022   **T.Xue**, S.Mao, Mapped shape optimization method for rational design of cellular mechanical metamaterials under large deformation, *International Journal for Numerical Methods in Engineering*, 2022.

2021   X.Sun, **T.Xue**, S.M. Rusinkiewicz, R.P.Adams, Amortized Synthesis of Constrained Configurations Using a Differentiable Surrogate, *NeurIPS*, 2021.

2021   **T.Xue**, S.Adriaenssens, S.Mao, Mapped phase field method for brittle fracture, *Computer Methods in Applied Mechanics and Engineering*, 2021.

2021   **T.Xue**, W.C.Sun, S.Adriaenssens, Y.Wei, C.Liu, A new finite element level set reinitialization method based on the shifted boundary method, *Journal of Computational Physics*, 2021.

2020   A.Beatson, J.T.Ash, G.Roeder, **T.Xue**, R.P.Adams, Learning Composable Energy Surrogates for PDE Order Reduction, *NeurIPS*, 2020.

2020   **T.Xue**, T.J.Wallin, Y.Menguc, S.Adriaenssens, M.Chiaramonte Machine learning generative models for automatic design of multi-material 3D printed composite solids, *Extreme Mechanics Letters*, 2020.

2020   **T.Xue**, A.Beatson, S.Adriaenssens, R.P.Adams, Amortized Finite Element Analysis for Fast PDE-Constrained Optimization, *ICML*, 2020.

2020 **T.Xue**, A.Beatson, M.Chiaramonte, G.Roeder, J.T.Ash, Y.Menguc, S.Adriaenssens, R.P.Adams, S.Mao, A data-driven computational scheme for the nonlinear mechanical properties of cellular mechanical metamaterials under large deformation, *Soft Matter*, 2020.

2019 Y.Wan, **T.Xue**, Y.Shen, The successive node snapping scheme for an evolving branched curve in 2D and 3D, *Computer-Aided Design*, 2019.

2019 Y.Wan, **T.Xue**, Y.Shen, The successive node snapping scheme: A method to obtain conforming meshes for an evolving curve in 2D and 3D, *Finite Elements in Analysis and Design*, 2019.

2017 M.Ma, **T.Xue**, S.Chen, Y.Guo, Y.Chen, H.Liu, Features of structural relaxation in diblock copolymers, *Polymer Testing*, 2017.

Teaching

2017-2021 **Graduate Teaching Assistant**, Princeton University.
SML201 Introduction to Data Science
COS424 Fundamentals of Machine Learning
CEE205 Mechanics of Solids

2013-2017 **Undergraduate Teaching Assistant**, Shanghai Jiao Tong University.
VM382 Mechanical Behaviour of Materials
VP140 Physics

Internship

2020 **Quantitative Researcher**, Sixie Capital, Shanghai.
Statistical analysis of market data: Seeking investment alpha

2019 **Research Intern**, Facebook, Inc., Redmond.
AR/VR at Facebook Reality Labs: Deep learning for 3D printing material design

2017 **Product Design Engineer**, Apple, Inc., Shanghai.
Apple accessories team: Keyboard design and manufacturing

Presentations

2021 USACM Workshop on New Trends and Open Challenges in Computational Mechanics: from Nano to Macroscale

2020 ICLR Workshop on Integration of Deep Neural Models and Differential Equations

2018 13th World Congress on Computational Mechanics)

Reviewing

Nature Materials 、 *Extreme Mechanics Letters*、 *NeurIPS*

Selected Honors

2017 **Gordon Y.S. Wu Fellowships**   *A highly prestigious award at Princeton University*

| 2016 | **The Merit Student Model** | *Person of the year at Shanghai Jiao Tong University* |
| 2015 | **National Scholarship** | *Top scholarship for undergraduate students in China* |

Skills

Tools Matlab, LaTeX
Programming Languages Python, C/C++

Languages

| **Mandarin** | *Native* |
| **English** | *TOEFL: 111/120* |

References

Jian Cao, Cardiss Collins Professor.
Department of Mechanical Engineering,
Northwestern University.
E-mail: jcao@northwestern.edu

Sigrid Adriaenssens, Associate Professor.
Department of Civil and Environmental Engineering,
Princeton University.
E-mail: sadriaen@princeton.edu

Ryan P. Adams, Professor.
Department of Computer Science,
Princeton University.
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