

Ph.D

[IRDS Analytics Lab](#)

University of Massachusetts Dartmouth

☎: +1 (508) 617-6396

✉: [xwang5@umassd.edu](mailto:xwang5@umassd.edu)

# Xuejing Wang

## Curriculum Vitae

### Research Interests

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Material Modelling and Material Resilience under Extreme Events.

Topics including Machine-learning Assisted Approaches to Material Modelling and Mechanics Problems, Fracture Mechanics, Porous Materials and Disorder, Statistical Analysis

### Chronology of Education

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- Sep. 2017 – Feb. 2022 *University of Massachusetts Dartmouth, USA*

#### **Doctor of Engineering and Applied Science**

*Dissertation: A Physics-Based and Machine Learning Approach for Learning Microtexture-Effective Fracture Properties of Porous Materials*

Advisor(s): Dr. Arghavan Louhghalam, Dr. Mazdak Tootkaboni

Committee Members: Dr. Alireza Asadpoure, Dr. Alfa Heryudono, Dr. Jun Li

- Sep. 2013 – Jul. 2016 *Politecnico di Milano, Italy*

#### **Master of Civil Engineering for Risk Mitigation**

*Thesis: Concrete Modeling in Hot Conditions Cracking Behavior and Material Stiffness Decay*

Advisor: Dr. Roberto Felicetti

- Sep. 2003 - June 2007 *Huaihai Institute of Technology, China*

**Bachelor** of Civil Engineering with honor.

### Research Experience

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- **Reaching Assistant (2017-now) University of Massachusetts, Dartmouth**

Proposed a potential-of-mean-force inspired Lattice Element Method approach which efficiently simulates the mechanical performance of heterogeneous materials.

Explored new metrics for the quantification of microtexture of the porous materials. New metrics including statistics of pore phase and graph theoretical items.

Applied the machine-learning techniques to predict the macroscopic response of the porous materials. Leverage the feature selection through machine-learning techniques to determine the key dominant features impacting the mechanical properties of porous materials.

- **Graduation Project (2016) Politecnico di Milano, Milan**

Developed algorithms to estimate the experimental data which is obtained from the behavior of reinforced concrete slabs subjected to extreme temperatures.

Simulated the behavior of reinforced concrete slabs with simple constituents and microtextures subjected to extreme temperatures via ABAQUS.

## Teaching Experience

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- **CEN202**      Mechanics of Materials Lab *2021Spring, 2020Spring*  
**Teaching assistant**    Office hours, grading, lab lectures, experiment design
- **EGR300**      Engineering math Lab *2020Fall*,  
**Teaching assistant**    Office hours, grading, lab lectures
- **CEN305**      Soil Mechanics *2019Fall*,  
**Guest lecture**      Office hours, grading, guest lectures
- **CEN315**      Soil Mechanics Lab *2019Fall*,  
**Teaching assistant**    Office hours, grading, lab lectures

## Presentations & Service

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- **Engineering Mechanics Institute Conference 2022 (Johns Hopkins University)**  
**Presentation:** *A Machine-learning Approach to Development of Microtexture-Effective Property Relationship (accepted)*
- **Engineering Mechanics Institute Conference 2020 (Columbia University)**  
**Presentation:** *Statistical Analysis of Fracture in Porous Material*
- **Engineering Mechanics Institute Conference 2019 (Caltech)**  
**Presentation:** *Statistical analysis of relation between texture and fracture properties in porous materials*
- **Engineering Mechanics Institute Conference 2018 (MIT)**  
**Presentation:** *Texture and Disorder: Impact on Fracture Properties of Porous Materials*
- **Engineering Mechanics Institute Conference 2018 (MIT)**  
**Volunteer:** *A panel discussion the paths to promote diversity in the engineering mechanics research community*

## Publications

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- X. Wang, M. Botshekan, F.-J. Ulm, M. Tootkaboni, A. Louhghalam,    A hybrid potential of mean force approach for simulation of fracture in heterogeneous media, *Computer Methods in Applied Mechanics and Engineering* 386 (2021) 114084

## Academic Honors

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| 2018      | Distinguished Doctoral Fellowship.         |
| 2017-now  | Graduate assistant scholarship.            |
| 2007      | Graduation Design Excellence.              |
| 2004-2007 | The Scholarships for outstanding students. |

## Industry Experience

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I have been working in the Research Group for Multi-Storey and Tall Buildings and Fire-Resistance of Steel Structures, Tongji University as **Engineer** (2010-2013) and **Research assistant** (2012-2013). I served as the **main analyst** and **primary assistant** in the steel structure Fire-Resistance safety consultant committee for many important infrastructures, including:

- National Exhibition and Convention Center (Shanghai), 2013
- Shanghai Pudong Airport Terminal 1 Reconstruction Project, 2012
- Shenyang Art Centre, 2010

## Skills & Abilities

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- ❑ A strong background in Solid mechanics, Fracture mechanics, Material modeling, Structure analysis and Structure design, Numerical simulation, Statistical analysis and Scientific computation.
- ❑ Excellence in MATLAB programming and AutoCAD.
- ❑ Experience with Mathematica, Linux environment, and Parallel Computing by MATLAB.
- ❑ Experience with ABAQUS, SAP2000, MIDAS, and ETABS.
- ❑ Considerable knowledge in C/C++, R, Python, and ArcGIS.
- ❑ A quick learner and excellent team worker who is humble, patient, and open-minded.
- ❑ Fluent in Mandarin and English.