Zhiyi Tang

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Objective

My research studies structural health monitoring (SHM) for civil infrastructures. I am interested in developing methods that learn structural behavior/performance as inverse problems. Also, I pay close attention to improve monitoring systems' reliability.

Work / Teaching Experience

Lecturer, Falculty of Civil Engineering and Mechanics — Dec 2021 – Now
Kunming University of Science and Technology, Kunming, China

Asia-Pacific-Euro Summer School (APESS) on Smart Structures Technology, Qingdao, China — July – Aug 2018
Volunteer
- Curriculum Planning, Daily Life Support, Final Group Project TA
  https://github.com/dawnnao/APESS2018_Steel_Girder_Crack_ID_dataset
- Manager: Hui Li

Harbin Institute of Technology, Harbin, China — Sep – Nov 2016
Teaching Assistant
- Developed course material and assignments for structural health monitoring of civil infrastructure
- Instructors: Hui Li, Yuequan Bao

Tibetan Traditional Medical College, Lahsa, China — Aug 2013 – July 2014
Volunteer Teacher
- English Teaching, Non-Profit Public Service Activities
- Manager: Tsering

Education

Visiting Scholar, Civil Engineering — Oct 2019 – Sep 2020
Purdue University, West Lafayette, IN, USA
- Co-advisor: Mohammad Reza Jahanshahi

Ph.D. Student, Engineering Mechanics — Sep 2016 – July 2021
Harbin Institute of Technology, Harbin, China
- Advisor: Yuequan Bao

Master of Science, Civil Engineering — Sep 2014 – July 2016
Harbin Institute of Technology, Harbin, China
- Thesis: Blind Source Separation of Bridge Multi-Vibration
- Advisor: Hui Li

Bachelor of Science, Theoretical and Applied Mechanics — Sep 2009 – July 2013
Harbin Institute of Technology, Harbin, China
- Thesis: Long-Span Bridge Aerodynamic Damping Analysis

- Advisor: Hui Li

Publications

1. Jingran He, Ruofan Gao, and **Zhiyi Tang**. "A data-driven multi-scale constitutive model of concrete material based on polynomial chaos expansion and stochastic damage model." *Construction and Building Materials*. 2022.
2. Dawei Liu, **Zhiyi Tang**, Yuequan Bao, and Hui Li. "Machine-learning-based methods for output-only structural modal identification." *Structural Control and Health Monitoring*. 2021.
3. **Zhiyi Tang**, Yuequan Bao, and Hui Li. "Group sparsity-aware convolutional neural network for missing data recovery of structural health monitoring." *Structural Health Monitoring*. 2020.
4. Yuequan Bao, **Zhiyi Tang**, and Hui Li. "Compressive-sensing data reconstruction for structural health monitoring: a machine-learning approach". *Structural Health Monitoring*. 2019.
5. **Zhiyi Tang**, Zhicheng Chen, Yuequan Bao, and Hui Li. "Convolutional neural network-based data anomaly detection method using multiple information for structural health monitoring". *Structural Control and Health Monitoring*. 2018.
6. Yuequan Bao, **Zhiyi Tang**, Hui Li, and Yufeng Zhang. "Computer vision and deep learning–based data anomaly detection method for structural health monitoring". *Structural Health Monitoring*. 2018.
7. Zhengliang Xiang, Yuequan Bao, **Zhiyi Tang**, and Hui Li. "Deep reinforcement learning-based sampling method for structural reliability assessment." *Reliability Engineering & System Safety*. 2020.
8. Zhicheng Chen, Yuequan Bao, **Zhiyi Tang**, Jiahui Chen, and Hui Li. "Clarifying and quantifying the geometric correlation for probability distributions of inter-sensor monitoring data: A functional data analytic methodology." *Mechanical Systems and Signal Processing*. 2020.
9. Yuequan Bao, Zhicheng Chen, Shiyin Wei, Yang Xu, **Zhiyi Tang**, and Hui Li. "The State of the Art of Data Science and Engineering in Structural Health Monitoring." *Engineering*. 2019.

Honors

- Excellent Doctoral Dissertation of Harbin Institute of Technology (31 over 1000+ yearly) 2022
- KUST High-level Talent Introduction Program: 5th level 2021
- National Scholarship of Ministry of Education (8 over 300+ yearly) 2019
- 1st Prize Innovation Scholarship of Ministry of Industry and Information Technology 2019
- Excellent paper of WTC 2018 (74 over 1829): "Artificial Intelligence-based Data Anomaly Detection Method for Structural Health Monitoring", Beijing 2018
- Best Performance Award - 2nd Prize (8 groups) in APESS 2017, Yokohama 2017
- JSTI co. Structural Health Monitoring Graduate Fellowship (3 over 200+ yearly) 2016
- HIT Graduate Scholarship 2014 – 2016
- The Source of Love Scholarship for Volunteers 2014
- Excellent Undergraduate Thesis of Harbin Institute of Technology (100 over 6,000+ yearly) 2013
- XIANZI ZENG Scholarship for distinguished undergraduates 2010 – 2013
- HIT Dong Liang Scholarship for top grades undergraduates 2010

Computer Skills

Python, MATLAB, TensorFlow, PyTorch, LaTeX, R, ANSYS, JavaScript, HTML, CSS, Linux, Mac

Acdemic Activities

- Reviewer for *Structural Health Monitoring*, *Mechanical Systems and Signal Processing*, *Automation in Construction*, *Advanced Engineering Informatics*, *Measurement*, and *Sensors*
- ASCE student member, IEEE student member
- Engineering Mechanics Institute Conference 2020, New York (online) 2021
- Engineering Mechanics Institute Conference 2019, Pasadena 2019
- 7th World Conference on Structural Control and Monitoring, Qingdao 2018
- 11th Asia-Pacific-Europe Smart Structures Summer School, Qingdao 2018
- 1st World Transportation Convention, Beijing 2018
- 8th Cross-Strait Workshop on Civil Infrastructure Mornitoring and Control, Hangzhou 2017
- 10th Asia-Pacific-Europe Smart Structures Summer School, Yokohama 2017