

# Zhiyi Tang

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## Objective

My research studies structural health monitoring (SHM) for civil infrastructures. I am currently interested in developing computationally efficient and statistical guaranteed methods that learn structural behavior and performance under modern deep learning architectures to meet the practical demand from large-scale multimodal SHM data processing.

## Education

- Visiting Scholar, Civil Engineering Since October 2019  
Purdue University, West Lafayette, IN  
- Co-advisor: Mohammad Reza Jahanshahi
- Ph.D. Student, Engineering Mechanics Since September 2016  
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. **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. Under revision.
2. Zhengliang Xiang, Yuequan Bao, **Zhiyi Tang**, and Hui Li. "Deep reinforcement learning-based sampling method for structural reliability assessment." *Reliability Engineering & System Safety*. 2020.
3. 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.
4. 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.
5. Yuequan Bao, **Zhiyi Tang**, and Hui Li. "Compressive-Sensing Data Reconstruction for Structural Health Monitoring: A Machine-Learning Approach". *Structural Health Monitoring*. 2019.
6. **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.

7. 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.

## Work / Teaching Experience

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/dawnao/APESS2018\\_Steel\\_Girder\\_Crack\\_ID\\_dataset](https://github.com/dawnao/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

## Honors

- National Scholarship of Ministry of Education (8 over 300+ yearly)      2019
- 1st Prize Innovation Scholarship of Ministry of Industry and Information Technology      2019  
(teamwork, 10 persons or teams over 30000 yearly)
- Excellent paper of WTC 2018 (74 over 1829): "Artificial Intelligence-based Data Anomaly      2018  
Detection Method for Structural Health Monitoring", Beijing
- 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
- Source of Love Scholarship for Volunteers      2014
- HIT Best Thesis for Undergraduate (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, L<sup>A</sup>T<sub>E</sub>X, R, ANSYS, JavaScript, HTML, CSS, Linux, Mac

## Academic Activities

- Reviewer for *Structural Health Monitoring*
- ASCE student member
- IEEE student member
- 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 Monitoring and Control, Hangzhou      2017
- 10th Asia-Pacific-Europe Smart Structures Summer School, Yokohama      2017