ZHENKUN LI, DOCTOR OF SCIENCE — CURRICULUM VITAE

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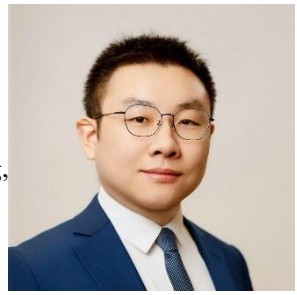

Research interests: structural health monitoring, digital twins, automation, maintenance, deep learning, system identification, damage detection, drive-by inspection, Bayesian inference, computer vision.
Strengths: signal processing, mathematics, computer programming, finite element analysis.

DEGREES

10.2021-10.2023 **Doctor of Science (Technology), D.Sc. (Tech.),** Civil Engineering, GPA: 4.63/5.0.
Supervisor: Prof. Weiwei Lin
School of Engineering, Aalto University, Espoo, Finland.
Thesis: *Bridge health condition assessment using instrumented moving vehicles* (with distinction).

09.2017-06.2020 **Master of Engineering (M.Eng.),** Structural Engineering, GPA: 3.76/4.0.
Supervisor: Prof. Jilin Hou
Faculty of Infrastructure Engineering, Dalian University of Technology, Dalian, China.
Thesis: *Additional Virtual Mass Damage Identification Method Based on Narrow Band Frequency Responses* (with distinction).

09.2013-06.2017 **Bachelor of Engineering (B.Eng.),** Civil Engineering, GPA: 3.54/4.0 (WES Evaluation).
School of Civil Engineering, Qingdao University of Technology, Qingdao, China.
Diploma thesis: *Architecture and structural design of HOTEL SWAN LAKE at Changdao*.

WORK EXPERIENCE

10.2026-Present **Postdoctoral Researcher, Technical University of Denmark, Roskilde, Denmark.**
Supervisor: Dr. Kim Branner, Senior Researcher.
Research on SHM, digital twins, computer vision, operation and predictive maintenance for wind turbines.

12.2025-09.2026 **Research Fellow, Politecnico di Milano, Milan, Italy.**
Supervisor: Prof. Maria Pina Limongelli
Research on crowdsensing, satellite-based monitoring, computer vision, value of information, and digital twins.

11.2023-11.2025 **Postdoctoral Researcher, Aalto University, Espoo, Finland.**
Supervisor: Prof. Weiwei Lin
Research on SHM, vehicle scanning methods, machine learning, robots, digital twins, and computer vision.

04.2021-09.2021 **Structural Algorithm Engineer, Beijing Smartbow Information Technology Co., Ltd., Beijing, China.**
Developed algorithms for SHM and operational modal analysis using Python and MATLAB.

07.2020-03.2021 **Structural Engineer, TCDRI, Sinoma International Co., Ltd., Tianjin, China.**
Structural design using PKPM, YJK, Midas and AutoCAD, and Revit development (using C#).

RESEARCH PROJECTS

- POLIMI Excellence Postdoctoral Fellowship, Development and Value Quantification of Low Carbon Footprint Structural Health Monitoring Systems for Bridge Integrity Management (recipient: Zhenkun Li), 12/2025-09/2026, €109,600, Concluded early upon departure from Politecnico di Milano; final report submitted, Principal Investigator.
- Grant from Finnish Transport Infrastructure Agency, City of Espoo, and City of Helsinki, SHM of Bridges (recipient: Weiwei Lin and VTT Oy), 09/2024-08/2026, €160,000, Completed, Key Researcher.
- Jane and Aatos Erkko Foundation in Finland, Grant number: 210018, Automated Inspection System for Bridges using Drive-By Method and Deep Learning (recipient: Weiwei Lin), 09/2021-08/2024, €346,000, Completed, Key Researcher.
- National Natural Science Foundation of China (NSFC), Grant number 51878118, Structural damage identification and experiment study of slab track based on adding virtual physical parameters (recipient: Jilin Hou), 01/2019-12/2022, CNY 680,000, Completed, Key Researcher.

PROFESSIONAL ACTIVITIES

- **Editorial**
  - ✧ **Associate Editor:** Nondestructive Testing and Evaluation.
  - ✧ **Early Career Editorial Board**, Advances in Bridge Engineering, Bridge Engineering (BREN) in ICE Proceedings, Smart Construction, Smart Underground Engineering, Journal of Railway Science and Technology, Journal of Municipal Technology; AI & Materials; Intelligent Transportation Infrastructure.
  - ✧ **Reviewing Editor** (Springer Nature)
  - ✧ **Guest editor**
    - Advances in Structural Engineering: *Civil Infrastructure Health Monitoring and Digital Twins Integrated with Verification, Validation, and Uncertainty Quantification*.
    - Structural Durability & Health Monitoring: *Sustainable and Resilient Civil Infrastructure with Intelligence and Digital Transformation*.
    - Structural Durability & Health Monitoring: *Structural Health Monitoring, Modeling, and Durability Assessment of Civil Infrastructure under Operational and Environmental Actions.*

- Buildings & Sensors: *Recent Developments and Applications in Vehicle-Assisted Structural Health Monitoring for Infrastructures*.
- Applied Sciences: *Evaluation of Buildings' and Infrastructures' Performance and Analysis of Seismic and Naturally Induced Disasters*.
- Structural Durability & Health Monitoring: *Advanced Computer Vision Methods and Related Technologies in Structural Health Monitoring*.
- Buildings: *Advanced Cementitious Materials: Integrating Nanotechnology, Sustainability, and Intelligent Design*.

- **Grant evaluation**
  - ✧ AU-funded internal research grants, Deanship of Research and Graduate Studies, Ajman University (AU), United Arab Emirates (UAE).
- **Membership**
  - ✧ Individual member of the International Association for Bridge Maintenance and Safety (IABMAS).
  - ✧ Individual member of the International Association for Life-Cycle Civil Engineering (IALCCE).
  - ✧ Full member of Society for Civil Structural Health Monitoring (SCSHM).
  - ✧ Member of IABSE (Task Group 5.7: Digital Twins on Existing Bridges, https://www.iabse.org/TG5.7)
- **Reviewer**
  - ✧ Automation in Construction, Mechanical Systems and Signal Processing, Advanced Engineering Informatics, Construction and Building Materials, Developments in the Built Environment, Engineering Structures, Journal of Building Engineering, Journal of Sound and Vibration, Measurement, Journal of Civil Structural Health Monitoring, Advances in Structural Engineering, etc.
- **Supervision**
  - ✧ Joint PhD advisor, Yuxuan Wang at Politecnico di Milano and Southwest Jiaotong University, together with Prof. Maria Pina Limongelli and Prof. Ping Wang.
  - ✧ Doctoral thesis advisor, Ziyi Huang: "Signal Processing and Modal Fusion for Machine Learning-Enhanced Indirect Bridge Health Monitoring". Ongoing.
  - ✧ Master's thesis advisor, Yi Li: "Modal Frequency Extraction of a Bridge Subjected to Impulse Excitation from Parked Vehicle".
  - ✧ Master's thesis advisor, Ziyi Huang: "Numerical and experimental studies on the extraction of bridge mode shapes using vehicle response".
  - ✧ Bachelor's thesis advisor, Xinyue Li, "Time-Varying Characteristic Analysis of Vehicle-Bridge Interaction System Frequencies: A Literature Review".
  - ✧ Bachelor's thesis advisor, Mikko Ihamäki, "Review of semantic segmentation for crack images in SHM".
  - ✧ Supervisor of the EWSHM 2026 Young Researcher Challenge (Subject 1: Data-driven detection of trends and anomalies in civil engineering application), Group members: Liv Breivik (KTH Royal Institute of Technology, Sweden); Amir Zare Beiranvand (Politecnico di Bari, Italy); Tommaso Panigati (Politecnico di Milano, Italy); Murat Güven (Politecnico di Milano, Italy); Mohsen Rezvani Alile (Politecnico di Milano, Italy). Audience Prize: 3,000 €.
- **Teaching**
  - ✧ Teaching Assistant, Department of Civil Engineering, Aalto University, Espoo, Finland.
    - *Spring 2025*, Sustainability and Circular Economy in Civil Engineering (M.Sc. course by Prof. Weiwei Lin).
    - *Fall 2022, 2023, 2024, 2025*, Maintenance and Repair of Structures (M.Sc. course by Prof. Weiwei Lin).
    - *Fall 2021*, Fundamentals of Structural Design (B.Sc. course by Dr. Markou Athanasios).
  - ✧ Pedagogical training
    - A! Peda Intro (5 credits)
    - Teaching assistant as a learning instructor (2 credits)
    - Doctoral supervision (3 credits)

PERSONAL SKILLS & CERTIFICATES

- Languages: English (C1), Chinese (mother tongue), German (beginner).
- Chinese National Computer Rank Examination Certificate of Level 2, 3 (C programming language, Internet technology).
- Passed the Fundamental Examination for the Chinese National First-Class Registered Structural Engineer qualification.
- Chinese National Certificate of BIM Skill Proficiency Test Level 1.
- Main Software: Programming & Data Analysis: Python (scikit-learn, PyTorch), MATLAB, R, Julia, Octave | Finite Element Analysis: ANSYS, Abaqus | CAD/BIM: Revit, SOLIDWORKS | Scientific Writing: LaTeX, MS Office | Graphics: OriginLab, Illustrator, Inkscape, Photoshop, CorelDRAW.

SELECTED AWARDS & HONOURS

07.2026	Audience Prize at the EWSHM 2026 Young Researcher Challenge (supervisor)	EWSHM 2026 organizing committee
02.2024	Dean's doctoral Dissertation Award	Aalto University
03.2023	Incentive grant from Fabian and Jaakko Ahvenainen Foundation	Aalto University
06.2020	Excellent Master's Thesis	Dalian University of Technology
06.2020	Outstanding Graduate of Liaoning Province	Liaoning Province
11.2019	Scholarship of Chinese Road and Bridge	Dalian University of Technology
10.2018	Outstanding Postgraduate Student	Dalian University of Technology
10.2016	Scholarship from Shandong Province Government (1 out of 508 students)	Shandong Province
12.2015	Second Prize in National Mathematical Modeling Competition	National level, China
06.2015	Second Prize in the 14th Challenge Cup Competition in Shandong Province	Shandong Province

JOURNAL PUBLICATIONS (*Corresponding author, 🏆 ESI Highly Cited Papers)

[31] X.M. Yang, X.J. Yao, J. Zhang*, Z. Li*, Z.L. Sun. A Two-Stage Diagnostic Framework for Time-Varying Structural Damage: Synergy of Modal Decomposition and Spatiotemporal Localization. *Structural Control and Health Monitoring*, (2026), Accepted.

[30] S. Ai, **Z. Li***, A motion-region-based center frequency optimization method for Gabor wavelets in phase-based displacement measurement. *Computer-Aided Civil and Infrastructure Engineering*, 50 (2026) 100205. https://doi.org/10.1016/j.cacaie.2026.100205.

[29] S. Ai, **Z. Li***, Robustness evaluation of phase-based displacement measurement under illumination variation conditions. *Measurement* 287 (2026) 122441. https://doi.org/10.1016/j.measurement.2026.122441.

[28] Z. Huang, **Z. Li**, W. Lin*, L. Fülöp, A. Laikari, H. Arkima, R. Kytö, Vehicle Scanning Method for Bridge Mode Shape Extraction using Hilbert and Wavelet Transforms: Numerical and Experimental Validations. *International Journal of Structural Stability and Dynamics*. 27 (2027) 2750460. https://doi.org/10.1142/S0219455427504608.

[27] F. Lüleci, **Z. Li,** L. Ge, J. Liu, A. Malekjafarian, H.Y. Noh, M.R. Jahanshahi, M.P. Limongelli, F.N. Catbas*, Latent Infrastructure Sensing: Repurposing Existing Sensing Mechanisms for Infrastructure Health Monitoring. *Structural Health Monitoring* (2026) 14759217261455584. https://doi.org/10.1177/14759217261455584.

[26] **Z. Li***, S. Ereiz, E. Ozer, A. Malekjafarian, M. P. Limongelli, Pedestrian-sensed indirect footbridge frequency identification. *Journal of Sound and Vibration* 641 (2026) 119904. https://doi.org/10.1016/j.jsv.2026.119904.

[25] **Z. Li***, R. Kromanis, Temperature effects on strain retrieval using machine learning: A field study. *Structures* 88 (2026) 111949. https://doi.org/10.1016/j.istruc.2026.111949.

[24] Y. Ren, K. Feng*, E. OBrien, S. Taylor, T. Fayyad, **Z. Li**, W. Li, H. He, Experimental investigation of drive-by frequency identification for a scaled concrete bridge. *International Journal of Structural Stability and Dynamics* (2026). https://doi.org/10.1142/S0219455427502567.

[23] **Z. Li***, W. Lin, C.W. Kim, M.P. Limongelli, E. Chatzi, A comprehensive review of indirect bridge health monitoring. *Mechanical Systems and Signal Processing* 247 (2026) 113918. https://doi.org/10.1016/j.ymssp.2026.113918.🏆

[22] H. Zhou, L. Wu, Y. Quan, W. Chen, **Z. Li**, Z. Huang, X. Yin*, Structural safety assessment of bridge via FSI and concrete damage plasticity under barge-bridge collision. *Structures* 82 (2025) 110586. https://doi.org/10.1016/j.istruc.2025.110586.

[21] K. Chen*, W. Hou, **Z. Li**, X. Ren, W. Lin, Identifying critical category combinations of bridge cables at risk of internal resonances using data-mining technology. *Journal of Bridge Engineering* 31 (2026) 04025085. https://doi.org/10.1061/JBENF2.BEENG-7616.

[20] F. Lüleci, A. Algadi, **Z. Li,** F. N. Catbas*, Robot-Based Bridge Indirect Monitoring Leveraging Road Data Filtering for Modal Frequency Estimation. *Structure and Infrastructure Engineering* 21 (2025), 1898–1920. https://doi.org/10.1080/15732479.2025.2554720.

[19] K. Chen*, **Z. Li,** W. Hou, Y. Zhou, H. Xu, W. Lin, A standardized framework for estimating in-plane modal properties of cable-stayed bridges with algebraic solutions. *International Journal of Structural Stability and Dynamics* (2025). https://doi.org/10.1142/S0219455427500088

[18] B. Liu, P. Liu, Y. Wang, **Z. Li,** H. Lv, W. Lu, T. Olofsson, T. Rabczuk*, Explainable machine learning for multiscale thermal conductivity modeling in polymer nanocomposites with uncertainty quantification. *Composite Structures* 370 (2025) 119292. https://doi.org/10.1016/j.compstruct.2025.119292. 🏆

[17] F. Zhang, A. Cannone Falchetto, D. Wang, **Z. Li***, Y. Sun, W. Lin, Prediction of asphalt rheological properties for paving and maintenance assistance using explainable machine learning, *Fuel* 396 (2025) 135319. https://doi.org/10.1016/j.fuel.2025.135319. 🏆

[16] **Z. Li***, Y. Lan, K. Feng, W. Lin, Investigation of time-varying frequencies of two-axle vehicles and bridges during interaction using drive-by methods and improved multisynchrosqueezing transform, *Mechanical Systems and Signal Processing* 220 (2024) 111677. https://doi.org/10.1016/j.ymssp.2024.111677.

[15] **Z. Li***, Y. Lan, W. Lin, Footbridge damage detection using smartphone-recorded responses of micromobility and convolutional neural networks, *Automation in Construction* 166 (2024) 105587. https://doi.org/10.1016/j.autcon.2024.105587.

[14] **Z. Li**, Y. Lan, W. Lin*, Indirect Frequency Identification of Footbridges with Pedestrians Using the Contact-Point Response of Shared Scooters, *Journal of Bridge Engineering* 29 (2024) 04024036. https://doi.org/10.1061/JBENF2.BEENG-6344.

[13] Y. Lan, **Z. Li**, W. Lin*, Physics-guided diagnosis framework for bridge health monitoring using raw vehicle accelerations, *Mechanical Systems and Signal Processing* 206 (2024) 110899. https://doi.org/10.1016/j.ymssp.2023.110899.

[12] Y. Lan, **Z. Li**, K. Koski, L. Fülöp, T. Tirkkonen, W. Lin*, Bridge frequency identification in city bus monitoring: A coherence-PPI algorithm, *Engineering Structures* 296 (2023) 116913. https://doi.org/10.1016/j.engstruct.2023.116913.

[11] Y. Zhang*, **Z. Li**, R. Hao, W. Lin, L. Li, D. Su, High-fidelity time-series data synthesis based on finite element simulation and data space mapping, *Mechanical Systems and Signal Processing* 200 (2023) 110630. https://doi.org/10.1016/j.ymssp.2023.110630.

[10] **Z. Li**, W. Lin*, Y. Zhang, Bridge Frequency Scanning Using the Contact-Point Response of an Instrumented 3D Vehicle: Theory and Numerical Simulation, *Structural Control and Health Monitoring* 2023 (2023) 1–23. https://doi.org/10.1155/2023/3924349.

[9] **Z. Li**, Y. Lan, W. Lin*, Indirect damage detection for bridges using sensing and temporarily parked vehicles, *Engineering Structures* 291 (2023) 116459. https://doi.org/10.1016/j.engstruct.2023.116459.

[8] **Z. Li**, W. Lin*, Y. Zhang, Drive-by bridge damage detection using Mel-frequency cepstral coefficients and support vector machine, *Structural Health Monitoring* 22 (2023) 3302–3319. https://doi.org/10.1177/14759217221150932.

[7] **Z. Li**, W. Lin*, Y. Zhang, Real-time drive-by bridge damage detection using deep auto-encoder, *Structures* 47 (2023) 1167–1181. https://doi.org/10.1016/j.istruc.2022.11.094.

[6] Y. Lan, **Z. Li**, W. Lin*, A Time-Domain Signal Processing Algorithm for Data-Driven Drive-by Inspection Methods: An Experimental Study, *Materials* 16 (2023) 2624. https://doi.org/10.3390/ma16072624.

[5] **Z. Li**, Y. Lan, W. Lin*, Investigation of Frequency-Domain Dimension Reduction for A2M-Based Bridge Damage Detection Using Accelerations of Moving Vehicles, *Materials* 16 (2023) 1872. https://doi.org/10.3390/ma16051872.

[4] **Z. Li**, J. Hou*, Ł. Jankowski, Structural damage identification based on estimated additional virtual masses and Bayesian theory, *Structural and Multidisciplinary Optimization* 65 (2022) 45. https://doi.org/10.1007/s00158-021-03156-y.

[3] J. Hou*, **Z. Li**, Q. Zhang, Ł. Jankowski, H. Zhang, Local Mass Addition and Data Fusion for Structural Damage Identification Using Approximate Models, *International Journal of Structural Stability and Dynamics* 20 (2020) 2050124. https://doi.org/10.1142/S0219455420501242.

[2] J. Hou*, **Z. Li**, Ł. Jankowski, S. Wang, Estimation of virtual masses for structural damage identification, *Structural Control and Health Monitoring* 27 (2020) e2585. https://doi.org/10.1002/stc.2585.

[1] J. Hou*, **Z. Li**, Q. Zhang, R. Zhou, Ł. Jankowski, Optimal Placement of Virtual Masses for Structural Damage Identification, *Sensors* 19 (2019) 340. https://doi.org/10.3390/s19020340.

CONFERENCE PROCEEDINGS

[21] **Z. Li***, E. Ozer, S. Ereiz, A. Malekjafarian, M. P. Limongelli, A Crowdsensing-based Approach for Footbridge Frequency Identification using Pedestrian Response, 8th International Conference: Smart Monitoring, Assessment and Rehabilitation of Civil Structures (SMAR 2026), Dresden, Germany, 26-28 August 2026: pp. 865-872. https://doi.org/10.1016/j.prostr.2026.08.065.

[20] K. Feng*, T. Fayyad, S. Taylor, **Z. Li**, Fleet monitoring of bridges using drive-by operational deflection shapes, 8th International Conference: Smart Monitoring, Assessment and Rehabilitation of Civil Structures (SMAR 2026), Dresden, Germany, 26-28 August 2026: pp. 849-856. https://doi.org/10.1016/j.prostr.2026.08.063.

[19] S. Nuraliyev, S. Kameshwar, F. Luleci*, L. Ge, J. Liu, D. Jana, **Z. Li**, V. Giglioni, Bayesian-based analysis for modal identification via cost-friendly devices, 13th International Conference on Bridge Maintenance, Safety and Management (IABMAS 2026), Orlando, Florida, 7-10 July 2026: pp.366-373. https://doi.org/10.1201/9781003778677-41.

[18] **Z. Li***, Y. Lan, K. Feng, W. Lin, Extraction of Time-varying Bridge Frequency from Responses of Two-axle vehicles, 11th International Conference: Experimental Vibration Analysis for Civil Engineering Structures (EVACES 2025), Porto, Portugal, 2-4 July 2025: pp. 300-310. https://doi.org/10.1007/978-3-031-96114-4_32.

[17] Y. Lan*, **Z. Li**, W. Lin, "What you need is data!": Physics-guided TimeGAN for data expansion in bridge SHM, 11th International Conference: Experimental Vibration Analysis for Civil Engineering Structures (EVACES 2025), Porto, Portugal, 2-4 July 2025: pp. 273-282. https://doi.org/10.1007/978-3-031-96114-4_29.

[16] **Z. Li***, K. Feng, A. Markou, W. Lin, State-of-the-art review of vibration-based bridge health monitoring using Artificial Intelligence, 3rd Conference of the European Association on Quality Control of Bridges and Structures (EUROSTRUCT 2025), Dublin, Ireland, 2-5 September 2025: pp. 56-65. https://doi.org/10.1002/cepa.3377.

[15] K. Feng*, M. Lydon, **Z. Li**, Y. Ren, E. OBrien, J. Schooling, Recent developments in bridge scour monitoring in the UK and Ireland, 3rd Conference of the European Association on Quality Control of Bridges and Structures (EUROSTRUCT 2025), Dublin, Ireland, 2-5 September 2025: pp. 282-291. https://doi.org/10.1002/cepa.70018.

[14] **Z. Li***, Y. Lan, W. Lin, Indirect footbridge damage classification using explainable deep learning: A field-testing study, 13th International Conference on Structural Health Monitoring of Intelligent Infrastructure (SHMII-13), Graz, Austria, 1-5 September 2025: pp. 834-838. https://doi.org/10.3217/978-3-99161-057-1-130.

[13] A. Algadi, F. Luleci*, F. N. Catbas, **Z. Li,** Y. Nomura, Drive-by monitoring using adjacent road information to estimate bridge dynamics, in: Life-Cycle Performance of Structures and Infrastructure Systems in Diverse Environments, 1st ed., CRC Press, London, 2025: pp. 1162–1169. https://doi.org/10.1201/9781003595120-141.

[12] Y. Lan*, **Z. Li**, P. Acharya, W. Lin, Human threats in AI-driven asset management systems: A case study on vibration-based bridge SHM, in: Life-Cycle Performance of Structures and Infrastructure Systems in Diverse Environments, 1st ed., CRC Press, London, 2025: pp. 752–759. https://doi.org/10.1201/9781003595120-91.

[11] **Z. Li***, R. Hao, Y. Lan, P. Acharya, W. Lin, Rapid influence line identification for bridges using dynamic responses induced by two passages of a two-axle vehicle, in: Life-Cycle Performance of Structures and Infrastructure Systems in Diverse Environments, 1st ed., CRC Press, London, 2025: pp. 1195–1202. https://doi.org/10.1201/9781003595120-145.

[10] **Z. Li***, Y. Lan, W. Lin, Bridge damage classification using multiple responses of vehicles and 1-D convolutional neural networks, in: Bridge Maintenance, Safety, Management, Digitalization and Sustainability, 1st ed., CRC Press, London, 2024: pp. 1655–1663. https://doi.org/10.1201/9781003483755-193.

[9] Y. Lan*, **Z. Li**, W. Lin, Crowd-sensing drive-by monitoring for bridge frequency identification, in: Bridge Maintenance,

Safety, Management, Digitalization and Sustainability, 1st ed., CRC Press, London, 2024: pp. 1687–1694. https://doi.org/10.1201/9781003483755-197.

[8] **Z. Li***, Y. Lan, W. Lin, Crowdsensing-based automatic bridge health condition assessment using drive-by measurements and deep learning, E-Journal of Nondestructive Testing 29 (2024). https://doi.org/10.58286/29775.

[7] Y. Lan*, **Z. Li**, W. Lin, "Why Should I Trust You?": Exploring Interpretability in Machine Learning Approaches for Indirect SHM, E-Journal of Nondestructive Testing 29 (2024). https://doi.org/10.58286/29792.

[6] **Z. Li***, Y. Lan, W. Lin, Using Contact Residual Responses of a 3-DOF Scooter to Identify First Few Frequencies of the Footbridge, in: M.P. Limongelli, P.F. Giordano, S. Quqa, C. Gentile, A. Cigada (Eds.), Experimental Vibration Analysis for Civil Engineering Structures, Springer Nature Switzerland, Cham, 2023: pp. 132–143. https://doi.org/10.1007/978-3-031-39117-0_14.

[5] Y. Lan*, **Z. Li**, W. Lin, Automatic Drive-By Bridge Damage Detection via a Clustering Algorithm, in: M.P. Limongelli, P.F. Giordano, S. Quqa, C. Gentile, A. Cigada (Eds.), Experimental Vibration Analysis for Civil Engineering Structures, Springer Nature Switzerland, Cham, 2023: pp. 144–154. https://doi.org/10.1007/978-3-031-39117-0_15.

[4] **Z. Li***, W. Lin, Y. Zhang, Indirect bridge damage detection using frequencies identified from vibrations of a single two-axle vehicle, in: Life-Cycle of Structures and Infrastructure Systems, 1st ed., CRC Press, London, 2023: pp. 374–382. https://doi.org/10.1201/9781003323020-43.

[3] Y. Lan*, **Z. Li**, Y. Zhang, W. Lin, Small-scale damage detection of bridges using machine learning techniques and drive-by inspection methods, in: Life-Cycle of Structures and Infrastructure Systems, 1st ed., CRC Press, London, 2023: pp. 383–390. https://doi.org/10.1201/9781003323020-44.

[2] **Z. Li***, W. Lin, Y. Zhang, Drive-by Damage Detection in Bridges using Mel-frequency Cepstral Coefficients and Machine Learning, *8th World Conference on Structural Control and Monitoring (8WCSCM)*, Florida, U.S., 5-8 June 2022.

[1] Y. Zhang*, **Z. Li**, R. Hao, W. Lin, L. Li, D. Su, Vibration Data Synthesis by using Finite Element Analysis and Artificial Neural Network, *8th World Conference on Structural Control and Monitoring (8WCSCM)*, Florida, U.S., 5-8 June 2022.

INVITED LECTURES

- ***Invited presentation***, Bridge condition sensing based on vehicle response: Theories and experiments. Yuelu Forum in 2025 at Hunan University, China, 30 December 2025.
- ***Invited presentation***, Bridge sensing simulation and algorithm research based on vehicle response, The Second International Young Scholars Forum of National Institute of Information and Communication Technology and Tianmushan Laboratory at Beihang University, China, 29 September 2025.
- ***Invited presentation***, Indirect structural health monitoring for bridges using responses of passing vehicles, Beiyang Young Scholar Forum at Tianjin University, China, 29 October 2024.
- ***Invited presentation***, Bridge modal parameter identification and health monitoring based on vehicle responses, Qilu Youth Forum at Shandong University, China, 24 October 2024.
- ***Invited presentation***, Drive-by based bridge health monitoring and condition assessment: Lab and field tests, Advancing Bridge Sustainability: Workshop on Long-Term Indirect Monitoring, Espoo, Finland, 19 June 2024.
- ***Invited presentation***, Structural health monitoring for bridges based on vehicle responses, Chang'an Scholar Forum at Chang'an University, China, 14 December 2023.
- ***Invited Seminar***, Towards smart cities: indirect bridge health monitoring using responses of passing vehicles, Research Breakfast at Aalto University, Finland, 25 May 2023.

ORGANIZATION OF ACTIVITIES

- 06.2027, organizer of the special session "Digital Twins for Health Monitoring and Management: Sensing, Hybrid Modelling and Predictive O&M" in WESC 2027, Copenhagen, Denmark, 29 June–2 July 2027.
- 10.2027, organizer of the special session "Crowdsensing for Scalable Life-Cycle Infrastructure Monitoring" in IALCCE 2027, Tokyo, Japan, 18–21 October 2027.
- 09.2027, organizer of the special session "Mobile and indirect sensing for scalable bridge health monitoring" in EVACES 2027, Perugia, Italy, 7–10 September 2027.
- 08.2026, organizer of the mini-symposium "Crowdsourced and indirect approaches to Structural Health Monitoring" in SMAR 2026, Dresden, Germany, 26–28 August 2026.
- 07.2026, organizer of the special session "Advances in Modeling and Data-driven Techniques in Vibration-based Structural Monitoring" in WCSCM 2026, Sheffield, United Kingdom, 19–22 July 2026.
- 07.2026, organizer of the mini-symposium "Repurposing Urban Data Streams for Scalable Infrastructure Health Monitoring" in IABMAS 2026, Orlando, Florida, USA, 7–10 July 2026.
- 07.2026, organizer of the special session "Recent Advances in Artificial Intelligence and Computer Vision for Bridge Health Monitoring" in IABMAS 2026, Orlando, Florida, USA, 7–10 July 2026.
- 06.2026, organizer of the mini-symposium "Repurposing Urban Data Streams for Scalable Infrastructure Monitoring" in EMI 2026, Boulder, Colorado, USA, 2–5 June 2026.

- 06.2026, organizer of the mini-symposium “Towards Autonomous Resilience: Generative AI and Agentic Workflows for Infrastructure Systems” in EMI 2026, Boulder, Colorado, USA, 2–5 June 2026.
- 07.2025, organizer of the special session “Indirect Structural Health Monitoring (iSHM) of transportation infrastructures using responses of passing vehicles” in EVACES 2025, Porto, Portugal, 2–4 July 2025.
- 07.2025, organizer of the mini-symposium “Advances in Fiber optic sensing for intelligent Structural Health Monitoring” in Engineering Mechanics Institute International Conference 2025 (EMI 2025-IC), Beijing, China, 17–20 July 2025.
- 09.2025, organizer of the special session “Structural Health Monitoring of Transport Infrastructures using Drive-by Monitoring” in SHMII-2025, Graz, Austria, 2–5 September 2025.
- 09.2025, organizer of the special session “Structural Health Monitoring of Intelligent Civil Infrastructure using Fibre Optic Sensing” in SHMII-2025, Graz, Austria, 2–5 September 2025.
- 09.2025, organizer of the mini-symposium “Advances in Vibration-based Structural Health Monitoring for Bridge Structures” in EUROSTRUCT 2025, Dublin, Ireland, 2–5 September 2025.
- 09.2025, organizer of the mini-symposium “Innovations in Structural Health Monitoring and Management towards Climate Resilient Transport Infrastructure” in EUROSTRUCT 2025, Dublin, Ireland, 2–5 September 2025.
- 12.2024, organizer of workshop “Advancing bridge sustainability: workshop on long-term indirect monitoring”, Espoo, Finland.

INTERNATIONAL COLLABORATIONS

- **ETH Zurich, Switzerland:** Digital twinning, Physics-informed deep learning, Satellite-based monitoring.
- **University College Dublin, Ireland:** Crowdsensing, Human-based sensing, Smartphone, Deep learning, Smart city.
- **University of Twente, Netherlands:** Computer vision, Operational and environmental effects, Deep learning.
- **University of Central Florida, U.S.A.:** Robotics, Computer Vision, drive-by monitoring, Latent Infrastructure Sensing.