Lei Zhang

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Education

Ph.D. in Civil (Structural) Engineering - Northeastern University   2019/09 - Present

· Research Interest: *Performance-based Wind Engineering, Fragility Analysis, Life-Cycle Cost Analysis*
· CS Related Courses: *Algorithms; Data Structures, Algorithms & Applications in Computer Systems; Database Management System; Concepts of Object-Oriented Design; Introduction to Machine Learning and Pattern Recognition; Engineering Probability and Statistics*

M.E. in Architectural and Civil Engineering - Tongji University   2016/09 - 2019/06

· Thesis: *Modal Participation and Degree of Freedom Coupling Effects in Bridge Flutter Analysis*

B.E. in Civil Engineering - Tongji University   2012/09 - 2016/07

Skills

· Java, JavaScript, Node.js, Python, MATLAB, R, SQL, LaTex, Git

Projects

Online Learning Management System - React, Redux, Java, MySQL   2022/07

· Build the single-page client using React and implemented client services using Redux to allow course component toggling
· Created a local server hosting a MySQL database to process requests from the client via the Java middle tier
· Implemented RESTful web services on both the client and the server

E-store Web Application - Java Spring Boot, MyBatis, MySQL   2022/01

· Created the client that allows user register/login, profile access and session-based shopping cart and order management
· Built a local server to reponse to CRUD operations sent by the client through Java Spring Boot

A Local Data Warehouse - R, SQLite   2021/08

· Created a normalized relational OLTP database and populated it with data parsed from an XML document
· Transformed the normalized schema to a star schema with necessary dimension and transaction fact tables suitable for analysis

Experience

Graduate Research Assistant - Northeastern University   2019/09 - Present

· Develop a performance-based wind engineering framework based on Monte Carlo simulation for the risk and life-cycle cost assessment of vertical structures subjected to mixed-climate wind loads
· Apply stochastic methods and deep learning techniques (e.g. artificial neural network) for fast and computationally efficient fragility analysis of vertical structures induced by wind

Teaching Assistant - Northeastern University   2021/09 - 2021/12

· Provided assistance for *Steel Structure Design* with grading, office hour holding and lecturing

Graduate Research Assistant - Tongji University   2016/09 - 2019/06

· Performed FEM modeling of long-span cable-stayed/suspension bridges for dynamic property examination
· Designed and conducted sectional/full-model wind tunnel tests of extra long-span bridges on aerodynamic properties and solutions to vibration mitigation/suppression due to flutters and vortex-induced vibrations

Publications

· Zhang, L.; Caracoglia, L. (2021). "Wind-induced fragility of a monopole tower via Artificial Neural Network based surrogate analysis." *Engineering Structures*. (Under review)
· Zhang, L.; Caracoglia, L. (2021). "Layered Stochastic Approximation Monte-Carlo method for tall building and tower fragility in mixed wind load climates." *Engineering Structures*, 239: 112159.
· Yang, Y.; Zhang, L.; Ding, Q.; Ge, Y. (2018). "Flutter performance and improvement for a suspension bridge with central-slotted box girder during erection." *Journal of Wind Engineering and Industrial Aerodynamics*, 179: 118-124.

Awards and Honors

· College of Engineering Dean's Fellowship - Northeastern University   2019/05
· Excellent Graduate - Tongji University   2019/04