Zhanwen Xin

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EDUCATION BACKGROUNDS

PhD candidate – Civil Engineering: 2022 –2026, GPA: 4/4 Polytechnique Montréal, Canada

MSc – Civil Engineering: 2020 –2022, GPA: 4/4 Université Laval, Canada

BEng – Civil Engineering: 2016 –2020, GPA: 3.54/4 South China University of Technology, China

MAIN RESEARCH

PhD thesis: Probabilistic Data-driven Methods for Scalable Anomaly Detection in Infrastructures
Sep. 2021 – Aug. 2026

Supervisor: James-A. Goulet, Ph.D., P. Ing., professor in Polytechnique Montréal

My current research focuses on scalable anomaly detection methods using machine learning, including

- Enhancing structural anomaly detection using a bounded autoregressive component (published in *Mechanical Systems and Signal Processing*. Volume 212, pp.111279.)
- Decision-making agents for time series anomaly detection using reinforcement learning
- Reliable anomaly detection agents in the environments with partially observable Markov decision process
- Generation of time series data with high fidelity and complexity for training effective machine learning models

MSc thesis: Design of Ductile Timber-Concrete Composite Floors and Behaviors at Early Age

Jan. 2021 – Aug. 2022

Supervisor: Luca Sorelli, Ph.D., P. Ing., professor in Université Laval

Co-supervisor: Paul Gauvreau, Ph.D., P. Eng., professor in University of Toronto

The objective of the research on eco-friendly and resistant Timber-Concrete Composite (TCC) structures is threefold:

- Develop a bilinear model to approximate the shear behaviors of ductile TCC connection
- Experimentally investigate the early-age behaviors of TCC connection and study its correlation with the concrete strength
- Develop a simplified model that predicts the short-term deflection of TCC floor at different stages in order to minimize the stripping time on construction site

Bachelor thesis: Comparative Study on Wind Load Codes in China and HongKong

Dec. 2019 – Jun. 2020

Supervisor: Xuewei (Dino) Chen, Ph.D., Associate Director in WSP (HK), Adjunct Assistant Professor in HKU

Co-supervisor: Yi Yang, Ph.D., Researcher in South China University of Technology

- Develop software that calculates the wind load effects on buildings in China and Hong Kong

- Perform numerical analysis and comparison of wind effects estimated using two codes

Research internship: Superwood Building Material to Superwood Construction

Jul. 2019 – Oct. 2019

Supervisor: Xiaodong (Alice) Wang, Ph.D., Assistant Professor in Université Laval

- Fabricate timber planks and test their mechanical properties

AWARDS AND HONORS

Second Place Award in 180 Second Thesis	CANSIS (Québec)	Mar. 2024
Second Place in Research Presentation	GRS, Polytechnique	Jun. 2023
Mitacs Globalink Fellowship: 15 000 CAD	Mitacs (Canada)	Feb. 2021
CSC-Mitacs Scholarship: 10 000 CAD	CSC (China) and Mitacs (Canada)	Jul. 2019
University Scholarship: 2nd, 3rd, 3rd awards	SCUT, Guangzhou (China)	Sep. 2019, 2018, 2017

PROFESSIONAL SKILLS

Programming: Python, C++, MATLAB, Delphi and VBA
Others: Autodesk CAD, SAFI, SketchUp, and Revit, Adobe Photoshop, Premiere, ...

WORK EXPERIENCE

2025 - present	Teaching assistant in the structural reliability course	Montreal, Canada
2024 - present	Teaching assistant in the machine learning course	Montreal, Canada
Sep. 2020 – Dec. 2020	WSP Global Inc. (China)	Guangzhou, China
Dec. 2019	Residential Construction Development CO., LTD	Guangzhou, China
Jul. 2017	Pengcheng Construction Company	Shenzhen, China

LANGUAGE COMPETENCIES

English: Bilingual proficiency (IELTS 7.0 – L:7.5, R:8.0, S:6.0, W:6.5);
French: intermediate; Chinese, Cantonese: native; Spanish: elementary

VOLUNTEER EXPERIENCE

Sep. 2024	Judge	Jackalope Bouldering Competition	Québec, Canada
May. 2024	Assistant	Bouldering National Championship	Québec, Canada
Feb. 2021 - May. 2021	Participant	Language Exchange Group	Québec, Canada
Nov. 2016 - Dec. 2016	Volunteer Teacher	Sunshine Youth Volunteer Service	Guangzhou, China
July 2017 - Sept. 2017	Investigator	Walk Into Countryside Service	Yunfu, China

HOBBIES

Sport climbing, figure skating, cooking