**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