

# Christine Wun Ki Suen

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Google Scholar

LinkedIn

## Education

### Columbia University

2024–Present

*Ph.D. in Civil Engineering and Engineering Mechanics.*

– Research: Human-Robot Interaction, Construction Robot, Human-centered AI.

### University of British Columbia (UBC)

2022–2024

*M.A.Sc. in Civil Engineering.*

– Thesis: Egocentric Monocular Construction Worker Pose Estimation for Intelligent Construction.

### The Hong Kong Polytechnic University (PolyU)

2017–2021

*B.Sc. (Hons) in Geomatics, First Class Honours (Top 1).*

– Thesis: Persistent Homology: Hole Detection in LiDAR Point Clouds with Topological Data Analysis.

## Selected Publications

- [1] **Christine W. K. Suen** and Z. Zou. EgoWorkPM: A Worker-Centric Approach for Activity-Level Progress Monitoring in Construction via Egocentric Vision. *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, pp. 9472–9481, 2026.
- [2] **Christine W. K. Suen** and Z. Zou. Fine-Grained Worker Action Recognition using Multi-Stream Egocentric Video. *Computing in Civil Engineering*, 2026.
- [3] **Christine W. K. Suen** and Z. Zou. Psychologically Grounded Robot with Prosocial Behavior for HRI in Life-Threatening Scenarios. *Companion Proceedings of the 21st ACM/IEEE International Conference on Human-Robot Interaction*, 2026.
- [4] **Christine W. K. Suen**, Z. Liu, L. Huang, K. Duan, Y. Shi, and Z. Zou. ICON-Pose: An Egocentric Worker Action Recognition Dataset for Human-Robot Collaboration. *Artificial Intelligence for a Sustainable Built Environment*, 2026.
- [5] Z. Liu, J. Xu, **Christine W. K. Suen**, M. Chen, Z. Zou, and Y. Shi. Egocentric Camera-Based Method for Detecting Static Hazardous Objects on Construction Sites. *Automation in Construction*, 172:106048, 2025.
- [6] W. Cai, **Christine W. K. Suen**, and Z. Zou. LightSplat: Leveraging Gaussian Splatting for Illuminance Estimation in Light Audits. *Computing in Civil Engineering*, pp. 962–970, 2025.
- [7] K. Duan, **Christine W. K. Suen**, and Z. Zou. Robot Morphology Evolution for Automated HVAC System Inspections Using Graph Heuristic Search and Reinforcement Learning. *Automation in Construction*, 153:104956, 2023.

## Work Experience

### Research Assistant

2020–2022

*Department of Geomatics, PolyU.*

Research projects:

- Towards a Digital-Twin System for Smart Mobility for People with Disabilities (PwDs) Using Multi-Data Sensing and Big Data Analytics.
- Use of Multispectral Images on 3D LiDAR Models in Monitoring the Health Conditions and Structural Stability of Old and Valuable Trees and Stonewall Trees.

### Intern

2019–2020

*Civil Engineering and Development Department, HKSAR Government.*

- Conducted UAV and hydrographic survey for construction project monitoring.

## Teaching Experience

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**CIENE4256 Applied Machine Learning in Civil Engineering** Fall 2025

*Teaching Assistant*

*Department of Civil Engineering and Engineering Mechanics, Columbia University.*

**CIVL498A Applied Machine Learning for Construction Management** Fall 2023

*Teaching Assistant*

*Department of Civil Engineering, UBC.*

## Selected Academic Services

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### Reviewer

*International Symposium on Automation and Robotics in Construction (ISARC); IEEE International Conference on Human-Robot Interaction (HRI); Annual AAAI Conference on Artificial Intelligence; Canadian Journal of Civil Engineering.*

## Selected Talks and Workshops

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**ASCE International Conference on Computing in Civil Engineering (I3CE), Seoul, South Korea** June 2026

*Oral presentation: Fine-grained action recognition of construction workers using multi-stream egocentric inputs.*

**Computer Vision for the Built World Workshop, CVPR, Denver, USA** June 2026

*Poster presentation: A worker-centric approach to activity-level construction progress monitoring using egocentric video.*

**IEEE International Conference on Human-Robot Interaction (HRI), Edinburgh, UK** March 2026

*Poster presentation: a psychologically grounded robot exhibiting prosocial behavior in emergency scenarios.*

**ASCE International Conference on Computing in Civil Engineering (I3CE), Portland, USA** June 2023

*Oral presentation: Introducing ICON-Pose, the first egocentric dataset of worker actions.*

## Selected Honors and Awards

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**Data Sensing Analysis (DSA) Best Dataset Award, ASCE International Conference on Computing in Civil Engineering (I3CE)** 2025

*Recognized for the open-source release of a dataset for hazard object detection on construction sites.*

**Calatrava Fellowship, Columbia University** 2024

*Awarded in recognition of outstanding academic achievement and research excellence.*

**Geographic Information System (GIS) Top-Up Prize, Esri**

**Outstanding Work Award, The Hong Kong Polytechnic University (PolyU)**

**Dr. Winnie S. M. Tang Student Innovation and Entrepreneurship Scholarship 2022**

*Received multiple awards for RiskMapper, a GIS-based risk analysis and monitoring platform for construction management.*

**Best Dissertation Award, Hong Kong Institute of Surveyors (HKIS)** 2021

*Awarded for B.Sc thesis on topological analysis of building infrastructure LiDAR point clouds for hole detection.*

**First Runner-Up, Student BIM Challenge, Bentley Institute** 2021

*Recognized for the development of an innovative BIM-based 3D sculpture reconstruction project.*

## Other Skills

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**Programming:** Python, R, C++, MATLAB; **Languages:** English (Fluent), Cantonese (Native), Mandarin (Fluent).