Vivian W. H. Wong

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Assistant Professor, University of Florida
College of Design, Construction and Planning

EDUCATION

Stanford University, Stanford, CA — 2024
Ph.D. in Civil Engineering
Advisor: Kincho H. Law
Minor in Computer Science

Stanford University, Stanford, CA — 2019
Master of Science in Civil Engineering (Structural Engineering & Mechanics)

University of Illinois at Urbana-Champaign, Champaign, IL — 2017
Bachelor of Science in Civil Engineering

RESEARCH APPOINTMENTS

Assistant Professor, **University of Florida,** — 2024 - Current
College of Design, Construction and Planning, jointly appointed by:
M.E. Rinker, Sr. School of Construction Management (50%)
Department of Urban and Regional Planning (50%)

Graduate Student Researcher, **Stanford University,** — 2019 - 2024
Stanford Center at the Incheon Global Campus (SCIGC), and
Engineering Informatics Group
Advisor: Kincho H. Law

Dissertation title: Spatio-temporal Representation Learning: Applications to Manufacturing Planning and Pedestrian Crowd Analysis

Application Area #1 – **Pedestrian Mobility**: Applied machine learning on pedestrians for safer planning and management of the urban built environment under crowded scenarios

- Tracking, modeling and predicting crowd flow with CCTV videos and building floor plans
- Spatiotemporal pedestrian data acquisition and label generation

Application Area #2 – **Smart Manufacturing Systems**: Automated part quality control; adaptive production scheduling

- Defect localization, segmentation, classification in 3D printing parts
- Learning dispatching rules for the job shop scheduling problem to optimize resource allocation under unexpected interruptions

Methodology: Deep learning (graph neural networks, convolutional neural networks, reinforcement learning), tracking algorithms
Data types: Image, videos, spatio-temporal data

Amazon Science Applied Scientist Intern, **Amazon**, Seattle, Summer 2022
Mentor: Michael Matheny, Michael D. Porter

Undergraduate Research Assistant, Smart Structures Technology Laboratory, **University of Illinois at Urbana-Champaign** 2014 - 2017
Advisor: Billie F. Spencer, Jr.

PUBLICATIONS

Note: * indicates student funded by my lab.

Peer-Reviewed Journal Articles

J4 M. Sato, **V. W. H. Wong**, H. Yeung, P. Witherell and K. H. Law, "Identification and Interpretation of Melt Pool Shapes in Laser Powder Bed Fusion with Machine Learning", *Smart and Sustainable Manufacturing Systems*, December 2024; 8(1): 1–23.
https://doi.org/10.1520/SSMS20230035

J3 **V. W. H. Wong**, S. H. Kim, J. Park, J. Park and K. H. Law, "Generating Dispatching Rules for the Interrupting Swap-Allowed Blocking Job Shop Problem Using Graph Neural Network and Reinforcement Learning", *ASME Journal of Manufacturing Science and Engineering*, Jan 2024; 146(1): 011009.
https://doi.org/10.1115/1.4063652

J2 **V. W. H. Wong** and K. H. Law, "Fusion of CCTV Video and Spatial Information for Automated Crowd Congestion Monitoring in Public Urban Spaces". *Algorithms*, Mar 2023; 16(3):154.
https://doi.org/10.3390/a16030154

J1 **V. W. H. Wong**, M. Ferguson, K. H. Law, Y. T. Lee and P. Witherell, "Segmentation of Additive Manufacturing Defects Using U-Net". *ASME Journal of Computing and Information Science in Engineering*, June 2022; 22(3):031005.
https://doi.org/10.1115/1.4053078

Peer-Reviewed Conference Proceedings

C10 I. Gatmaitan*, Y. Dong, S. Valipoor, **V.W.H. Wong**, "Poster Abstract: Dynamic Mobility Barrier Detection Using Wheelchair-mounted Sensors," *ACM International Conference on Systems for Energy-Efficient Buildings, Cities, and Transportation (BuildSys'25)*, Golden, CO, Nov. 19-21, 2025, pp. 310-311.

C9 Q. Yu*, **V. W. H. Wong**, "PyRebuild: A Python-Based Simulator For the Dynamic Post-Earthquake Housing Reconstruction Problem," *ASCE International Conference on Computing in Civil Engineering (i3CE)*, New Orleans, LA, May 11-14, 2025.

C8 **V. W. H. Wong**, "Enhancing Data-Driven Predictive Modeling of Pedestrian Crowd Flow with Spatial Priors – Case Studies with Post-Event Crowd Data on a University Campus," *2024 IEEE International Conference on Big Data (IEEE BigData),* Washington, DC, Dec. 15-18, 2024, pp. 6795-6804.
Acceptance rate = 18.4%

C7 M. Sato, **V. W. H. Wong**, K. H. Law, H. Yeung and P. Witherell, "Explainability of Laser Powder Bed Fusion Melt Pool Classification Using Deep Learning", *ASME Computers and Information in Engineering Conference (CIE)*. Aug. 20-23, 2023.

C6 **V. W. H. Wong** and K. H. Law, "Modeling Crowd Data and Spatial Connectivity as Graphs for Crowd Flow Forecasting in Public Urban Space", *ASCE International Conference on Computing in Civil Engineering (i3CE)*, Corvallis, OR, Jun. 25-28, 2023.

C5 **V. W. H. Wong**, S. H. Kim, J. Park, J. Park and K. H. Law, "Generating Dispatching Rules for the Interrupting Swap-Allowed Blocking Job Shop Problem Using Graph Neural Network and Reinforcement Learning", *ASME Manufacturing Science and Engineering Conference (MSEC),* New Brunswick, NJ, Jun. 12-16, 2023.

C4 M. Sato, **V. W. H. Wong**, K. H. Law, H. Yeung, Z. Yang, B. Lane and P. Witherell, "Anomaly Detection of Laser Powder Bed Fusion Melt Pool Images", *International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (CIE)*, St. Louis, MO, Aug. 14-17, 2022.

C3 **V. W. H. Wong**, M. Ferguson, K. H. Law, Y. T. Lee and P. Witherell, "Segmentation of Additive Manufacturing Defects Using U-Net", *ASME Computers and Information in Engineering Conference (CIE)*. Aug. 17-20, 2021.

C2 **V. W. H. Wong**, M. Ferguson, K. H. Law, Y. T. Lee and P. Witherell, "Automatic Volumetric Segmentation of Additive Manufacturing Defects with 3D U-Net", *AAAI 2020 Spring Symposia*, Stanford, CA, USA, Mar. 23-25, 2020.

C1 **V. W. H. Wong**, M. Ferguson, K. H. Law and Y. T. Lee, "An Assistive Learning Workflow on Annotating Images for Object Detection", *2019 IEEE International Conference on Big Data*, Los Angeles, CA, USA, Dec. 9-12, 2019.
Acceptance rate = 18.7%

TEACHING

***Able to teach*: AI-related (Theory and Applications), Programming, Software Usage, Project-based engineering courses.**

Instructor - Undergraduate-level, University of Florida

AI in the Built Environment (DCP 4300) Fall 2025

Mean Instructor Eval. Score:

4.72 (at over 60% response rate)

(Recognized by Faculty Affairs for **exceptional GatorEval scores**)

Intro to Planning Information System (URP 4273) Fall 2025

4.50

Co-Instructor - Undergraduate + Graduate-level, University of Florida

Intro to Planning Information System (URP 4273/6270) Fall 2024

Mean Instructor Eval. Score:

4.61 (section 1-undergrad), 4.57 (section 2-grad)

(Recognized by Faculty Affairs for **exceptional GatorEval scores**)

Teaching Assistant - Graduate-level, Stanford

Optimization in Structural Engineering (CEE 380) Spring 2023

Finite Element Methods in Structural Dynamics (CEE 284) Autumn 2019, 2021, 2022

Structural Dynamics (CEE 283) Winter 2020, 2022

Co-Instructor - Undergraduate-level, UIUC

Engineering Orientation (ENG 100) Fall 2016

Teaching Assistant - Undergraduate-level, UIUC

Engineering First-Year Experience Seminars (ENG 177) Fall 2016

GRANTS AWARDED

	Project	Sponsor/Program	Role	Amount	Year
G2	Sensing for Empathetic Built Environments: Improving Wheelchair Accessibility and Inclusiveness on Campus through Data-Driven Analyses	University of Florida Research Opportunity Seed Fund (22% selectivity)	Lead PI	$85,230 (no IDC)	2025-2027

	Project	Sponsor/Program	Role	Amount	Year
G1	Explore Vision-Based AI's Usage in Landscape Performance Evaluation	University of Florida School of Landscape Architecture and Planning Director's Interdisciplinary Innovation Grant	Co-PI	$9,978 (no IDC)	2025-2026

Broadening Participation Activities

Faculty Advisor 2024 - Present
University of Florida Table Tennis Club

Mentor 2023
Stanford Womens Community Center (WCC) STEM mentorship program
Mentees: Lauren Williams, Jayna Huang

Coordinator 2023
Stanford Someone Like Me (SLM) mentorship program

Residence Community Associate 2018-2019
Stanford Kennedy Graduate Residence / Graduate Life Office

Always Connecting Representative 2017
Society of Women Engineers annual conference [link to media coverage]

Volunteer Instructor 2017
Shakes and Quakes outreach at Sangamon Elementary School

Co-Founder, President and Project Manager 2016 - 2017
Engineers In Action (EIA) UIUC for suspension bridge construction in underdeveloped communities in Guatemala and Panama

Field Representative 2016
Saha Global for delivering electricity and entrepreneurial opportunities for women in Ghana

Officer and Nominating Committee 2015 - 2017
Society of Women Engineers at UIUC

Academic Service

Conferences

ACM BuildSys'25 Publication Chair 2025

Paper Reviewer

Engineering Applications of Artificial Intelligence 2025
IEEE Transactions on Neural Networks and Learning System 2023
Optimization Letters 2022
Automation in Construction 2022
IEEE Big Data Conference 2019

Affiliations

ACM
ASCE
Society of Women Engineers (SWE)
Women in Science and Engineering (WISE) Group
Someone Like Me (SLM) Mentorship Program
Womens Community Center (WCC) STEM Mentorship Program

Awards & Honors

Blume Fellowship, Stanford University 2019
James Scholar, UIUC 2014 - 2017
Earle J. Wheeler Scholarship, UIUC 2016
Fred S. Bailey International Service Scholarship for Cause-Driven Leaders, UIUC 2016
International Engineering Fellowship, UIUC 2016
Wayne C. Teng Scholarship, UIUC 2015

Invited Talks

ST-DIF Python Package: Spatio-temporal Data Integration System for Pedestrian Crowd Flow 07/2025
Nigiwai: Placemaking Driven by Human Behavior, Stanford, CA

Spatiotemporal Data to Understand Human Behavior and Mobility in Urban Systems 05/2023
TU Delft–Stanford: Designing for Future Mobility Workshop, Stanford, CA

Understanding Human Behaviors in Smart Building and Urban Environments 06/2021
Stanford Center at the Incheon Global Campus First International Symposium, Online

Miscellaneous

Student Athlete on Stanford Table Tennis Team 2022 - 2024