



Yiwen Dong

- Ph.D. Student in Civil and Environmental Engineering, admitted Autumn 2020
- Ph.D. Minor, Electrical Engineering

Bio

BIO

Yiwen Dong is a Ph.D. student in the Department of Civil and Environmental Engineering at Stanford University, advised by Prof. Hae Young Noh. Her research interest is human behavior characterization and health monitoring through their interactions with the physical structures. Her current work focuses on human and animal health monitoring through footstep/activity-induced structural vibrations.

While structures are traditionally considered as passive and indifferent, her works allow the structures to be both self-aware and user-aware. Yiwen developed systems that utilize ambient structural vibrations to infer human behaviors and health status, which enables many smart building applications such as in-home patient monitoring and elder care, intruder prevention and occupant management, animal health monitoring, and welfare. She strives for the next-generation intelligent infrastructures by exploring the potential of structural monitoring for human-centered purposes.

Yiwen has an interdisciplinary background in structural engineering, electrical engineering, and machine learning. Yiwen received her Master's degree in Structural Engineering at Stanford University and her Bachelor's degree in civil engineering at Nanyang Technological University. She won various awards (Best Paper Award, runner-ups in competitions) in ubiquitous computing and cyber-physical system conferences. She is passionate about combining the physical knowledge from structural dynamics, sensing approaches from cyber-physical systems, and data-driven models from machine learning to infer people's behavior patterns and health status.

HONORS AND AWARDS

- CEE Rising Star, MIT CEE Rising Star Committee (2023)
- Centennial Teaching Assistant, Stanford University (2023)
- 2nd Place, Dynamics Paper Competition, Engineering Mechanics Institute (06/09/2023)
- Best Poster Award (runner-up), ACM BuildSys 2022 (11/10/2022)
- Best Paper Award (runner-up), Dynamics of Civil Structures, IMAC-XLII conference (02/16/2022)
- Best Paper Award, Second Nurse Care Activity Recognition Challenge, HASCA Workshop, UbiComp 2020 (09/17/2020)
- Gold Medal, Professional Engineers Board, Singapore (2018)
- Dean's List Excellent Academic Award, Nanyang Technological University, Singapore (2014-2018)
- SM2 Scholarship, Ministry of Education, Singapore (2013)

EDUCATION AND CERTIFICATIONS

- B.Eng., Nanyang Technological University, Singapore, Civil Engineering (2018)
- M.S., Stanford University, Structural Engineering (2020)

Publications

PUBLICATIONS

- **Characterizing the variability of footstep-induced structural vibrations for open-world person identification** *MECHANICAL SYSTEMS AND SIGNAL PROCESSING*
Dong, Y., Fagert, J., Noh, H.
2023; 204
- **TelecomTM: A Fine-Grained and Ubiquitous Traffic Monitoring System Using Pre-Existing Telecommunication Fiber-Optic Cables as Sensors** *PROCEEDINGS OF THE ACM ON INTERACTIVE MOBILE WEARABLE AND UBIQUITOUS TECHNOLOGIES-IMWUT*
Liu, J., Yuan, S., Dong, Y., Biondi, B., Noh, H.
2023; 7 (2)
- **Stranger Detection and Occupant Identification Using Structural Vibrations**
Dong, Y., Fagert, J., Zhang, P., Noh, H., Rizzo, P., Milazzo, A.
SPRINGER-VERLAG SINGAPORE PTE LTD.2023: 905-914
- **GaitVibe plus : Enhancing Structural Vibration-based Footstep Localization Using Temporary Cameras for In-home Gait Analysis**
Dong, Y., Liu, J., Noh, H., ACM
ASSOC COMPUTING MACHINERY.2022: 1168-1174
- **Re-Vibe: Vibration-based Indoor Person Re-Identification through Cross-Structure Optimal Transport**
Dong, Y., Zhu, J., Noh, H., ACM
ASSOC COMPUTING MACHINERY.2022: 348-352
- **Poster Abstract: Integration of Physics-Based Building Model and Sensor Data to Develop an Adaptive Digital Twin**
Miao, B. H., Dong, Y., Wu, Z. Y., Alemdar, B. N., Zhang, P., Kohler, M. D., Noh, H., ACM
ASSOC COMPUTING MACHINERY.2022: 282-283
- **MassHog: Weight-Sensitive Occupant Monitoring for Pig Pens using Actuated Structural Vibrations**
Codling, J. R., Bonde, A., Dong, Y., Cao, S., Sangpetch, A., Sangpetch, O., Noh, H., Zhang, P., ASSOC COMP MACHINERY
ASSOC COMPUTING MACHINERY.2021: 600-605
- **Social Distancing Compliance Monitoring for COVID-19 Recovery Through Footstep-Induced Floor Vibrations** *SenSys '21*
Dong, Y., et al
2021: 399-400
- **Non-parametric Bayesian Learning for Newcomer Detection using Footstep-Induced Floor Vibration** *IPSN '21*
Dong, Y., et al
2021: 404–405
- **PigNet: Failure-Tolerant Pig Activity Monitoring System Using Structural Vibration** *IPSN '21: International Conference on Information Processing in Sensor Networks*
Bonde, A., Codling, J., Naruethap, K., Dong, Y., et al
2021: 328–340
- **A window-based sequence-to-one approach with dynamic voting for nurse care activity recognition using acceleration-based wearable sensor** *UbiComp-ISWC '20*
Dong, Y., et al
2020: 390–395
- **MD-Vibe: physics-informed analysis of patient-induced structural vibration data for monitoring gait health in individuals with muscular dystrophy** *UbiComp-ISWC '20*
Dong, Y., et al
2020: 525–531