

Yantao Yu

Department of Building and Real Estate
The Hong Kong Polytechnic University
Hung Hom, Kowloon, Hong Kong SAR

Email: yt.yu@connect.polyu.hk

Phone: (86)15201524388

Orcid: [0000-0003-0400-3068](https://orcid.org/0000-0003-0400-3068)



EDUCATION

The Hong Kong Polytechnic University, Hong Kong

Ph.D. in Construction Informatics funded by **Hong Kong PhD Fellowship Scheme**

Dissertation was submitted in Oct 2019 and PhD degree is expected to be awarded in early 2020.

Tsinghua University, Beijing, China

2017 **M.S. (Excellent thesis)** in Construction Engineering and Management

2014 **B.S. (Excellent graduate)** in Construction Management

2014 B.S. (Minor) in Economics

GRANTS AND AWARDS

Grants and Fellowships

2017 Hong Kong Ph.D. Fellowship (HKD 300,000/3 years)

2017 General Research Fund project funded by the Research Grant Council of the Hong Kong University Grants Committee under Grant No. 152099/18E (Participant)

2016 Overseas Research Grant funded by Tsinghua University (RMB 20,000)

Awards and Honors

2018 Best Paper Award in the 35th International Symposium on Automation and Robotics in Construction (ISARC 2018)

2018 Outstanding Paper Award from the Chartered Institute of Building (Hong Kong)

2018 Best Paper Award in the 1st BIM-CIM Innovation Competition for College Students in Guangdong-Hong Kong-Macao Great Bay Area

2017 Excellent Master Thesis in Tsinghua University

2015 Excellent Paper of the First China BIM seminar

2014 Excellent Graduate in Tsinghua University

2014 First Prize of Student Research Training in Tsinghua University

PUBLICATIONS

h-index 8 ([Google Scholar](#)), 7 ([Scopus](#))

Citations 245 ([Google Scholar](#)), 151 ([Scopus](#))

Articles in Peer-Reviewed Journals

*Asterisk * indicates corresponding author*

First/corresponding author

- 2019 **Y. Yu**, H. Li, X. Yang, L. Kong, X. Luo, A.Y.L. Wong, An automatic and non-invasive physical fatigue assessment method for construction workers, *Automation in Construction*. 103 (2019) 1–12. doi:10.1016/j.autcon.2019.02.020.
- 2019 **Y. Yu**, H. Li, W. Umer, C. Dong, X. Yang, M. Skitmore, A.Y.L. Wong, Automatic Biomechanical Workload Estimation for Construction Workers by Computer Vision and Smart Insoles, *Journal of Computing in Civil Engineering*. 33 (2019) 04019010. doi:10.1061/(ASCE)CP.1943-5487.0000827.
- 2019 **Y. Yu**, X. Yang, H. Li, X. Luo, H. Guo, Q. Fang, Joint-Level Vision-Based Ergonomic Assessment Tool for Construction Workers, *Journal of Construction Engineering and Management*. 145 (2019) 04019025. doi:10.1061/(ASCE)CO.1943-7862.0001647.
- 2018 L. Kong, H. Li, **Y. Yu***, H. Luo, M. Skitmore, M.F. Antwi-Afari, Quantifying the physical intensity of construction workers, a mechanical energy approach, *Advanced Engineering Informatics*. 38 (2018) 404–419. doi:10.1016/j.aei.2018.08.005.
- 2017 **Y. Yu**, H. Guo, Q. Ding, H. Li, M. Skitmore, An experimental study of real-time identification of construction workers' unsafe behaviors, *Automation in Construction*. 82 (2017) 193–206. doi:10.1016/j.autcon.2017.05.002.

Co-author

- 2019 X. Luo, H. Li, X. Yang, **Y. Yu**, D. Cao, Capturing and Understanding Workers' Activities in Far-Field Surveillance Videos with Deep Action Recognition and Bayesian Nonparametric Learning, *Computer-Aided Civil and Infrastructure Engineering*. 34 (2019) 333–351. doi:10.1111/mice.12419.
- 2018 H. Guo, **Y. Yu**, Q. Ding, M. Skitmore, Image-and-Skeleton-Based Parameterized Approach to Real-Time Identification of Construction Workers' Unsafe Behaviors, *Journal of Construction Engineering and Management*. 144 (2018) 04018042. doi:10.1061/(ASCE)CO.1943-7862.0001497.
- 2018 X. Yang, H. Li, **Y. Yu**, X. Luo, T. Huang, X. Yang, Automatic Pixel-Level Crack Detection and Measurement Using Fully Convolutional Network, *Computer-Aided Civil and Infrastructure Engineering*. 33 (2018) 1090–1109. doi:10.1111/mice.12412.
- 2018 X. Luo, H. Li, D. Cao, **Y. Yu**, X. Yang, T. Huang, Towards efficient and objective work sampling: Recognizing workers' activities in site surveillance videos with two-stream convolutional networks, *Automation in Construction*. 94 (2018) 360–370. doi:10.1016/j.autcon.2018.07.011.

- 2018 X. Luo, H. Li, D. Cao, **Y. Yu**, X. Yang, T. Huang, Towards Efficient and Objective Work Sampling: Recognizing Workers' Activities in Site Surveillance Videos with Two-Stream Convolutional Networks, *Automation in Construction*. (2018).
- 2018 M.F. Antwi-Afari, H. Li, **Y. Yu**, L. Kong, Wearable insole pressure system for automated detection and classification of awkward working postures in construction workers, *Automation in Construction*. 96 (2018) 433–441. doi:10.1016/j.autcon.2018.10.004.
- 2018 Q. Fang, H. Li, X. Luo, L. Ding, T.M. Rose, W. An, **Y. Yu**, A deep learning-based method for detecting non-certified work on construction sites, *Advanced Engineering Informatics*. 35 (2018) 56–68. doi:10.1016/j.aei.2018.01.001.
- 2017 X. Yang, **Y. Yu**, H. Li, X. Luo, F. Wang, Motion-based analysis for construction workers using biomechanical methods, *Frontiers of Engineering Management*. 4 (2017) 84. doi:10.15302/J-FEM-2017004.
- 2017 H. Guo, **Y. Yu**, The availability of wearable-device-based physical data for the measurement of construction workers' psychological status on site: From the perspective of safety management, *Automation in Construction*. 82 (2017) 207–217. doi:10.1016/j.autcon.2017.06.001.
- 2017 H. Guo, **Y. Yu**, M. Skitmore, Visualization technology-based construction safety management: A review, *Automation in Construction*. 73 (2017) 135–144. doi:10.1016/j.autcon.2016.10.004.
- 2014 H. Guo, **Y. Yu**, W. Liu, W. Zhang, Integrated application of BIM and RFID in construction safety management, *Journal of Engineering Management*. (2014). doi:10.13991/j.cnki.jem.2014.04.018.

Journal Article Manuscripts Under Review

- 2019 M. F. Antwi-Afari, H. Li, W. Umer, **Y. Yu***, X. Xing. Construction Activity Recognition and Ergonomic Risk Assessment Using Wearable Insole Pressure System. Submit at *Journal of Construction Engineering and Management*.

Journal Article Manuscripts Submitted

- 2019 **Y. Yu**, H. Li, P. He, X. Luo, Y. Li, Residual ANN for 3D working posture estimation for laborers. Submit at *IEEE Transactions on Industrial Electronics*.

Book Chapters

- 2017 H. Guo, W. Liu, W. Zhang and **Y. Yu**. "BIM-based Construction Safety Management Platform." In: *BIM and Construction Safety Management* (pp. 69–91), edited by X. Zhao, China Architecture and Building Press, ISBN: 9787112206070

Conference Proceedings

- 2019 **Y. Yu**, H. Li, X. Yang. 3D posture estimation from 2D posture data from construction workers. 36th International Symposium on Automation and Robotics in Construction. Banff, AB, Canada. May 21–24, 2019.
- 2019 **Y. Yu**, H. Li, A. Wong. A non-intrusive method for measuring construction workers' muscle fatigue. CIB World Building Congress 2019. Hong Kong. Jun 17–21, 2019.

- 2018 **Y. Yu**, H. Li, X. Yang, W. Umer, Estimating Construction Workers' Physical Workload by Fusing Computer Vision and Smart Insole Technologies, in: 2018 Proceedings of the 35th ISARC, International Association for Automation and Robotics in Construction
- 2018 **Y. Yu**, J. Zhang, H. Guo, Investigation of the Relationship between Construction Workers' Psychological States and Their Unsafe Behaviors Using Virtual Environment-Based Testing, in: Computing in Civil Engineering 2017, American Society of Civil Engineers, Reston, VA, 2017: pp. 417–424. doi:10.1061/9780784480847.052.
- 2016 H. Guo, **Y. Yu**, W. Zhang, Y. Li, BIM and Safety Rules Based Automated Identification of Unsafe Design Factors in Construction, in: Procedia Engineering, Creative Construction Conference 2016, Budapest, 2016: pp. 467–472. doi:10.1016/j.proeng.2016.11.646.

Conference Presentations

- 2019 **Y. Yu**, H. Li, X. Yang. A non-intrusive method for measuring construction workers' muscle fatigue. The International Council for Research and Innovation in Building and Construction (CIB) World Building Congress 2019 – Constructing Smart Cities. Hong Kong. Jun 17–21, 2019.
- 2019 **Y. Yu**, H. Li, X. Yang. 3D posture estimation from 2D posture data from construction workers. 36th International Symposium on Automation and Robotics in Construction. Banff, AB, Canada. May 21–24, 2019.
- 2018 **Y. Yu**, H. Li, X. Yang, W. Umer. Estimating Construction Workers' Physical Workload by Fusing Computer Vision and Smart Insole Technologies, International Association for Automation and Robotics in Construction. Berlin, Germany. Jul 20–25, 2018.
- 2016 H. Guo, **Y. Yu**, W. Zhang, Y. Li. BIM and Safety Rules Based Automated Identification of Unsafe Design Factors in Construction, Creative Construction Conference 2016, Budapest, Hungary. May 25–28, 2016.
- 2015 **Y. Yu**, H. Guo. The Integration of BIM and Web 3.0, The 1st China BIM Academic Conference, Beijing, China. Oct 30–31, 2016.

RESEARCH EXPERIENCE

- 2017 The Hong Kong Polytechnic University
Research Assistant, Department of Building and Real Estate
- 2016 West Michigan University
Research Assistant, College of Engineering and Applied Science

RESEARCH INTERESTS

Construction informatics and automation: computer-vision-based and sensor-based construction site data collection and analysis

Occupational health and safety: real-time identification of unsafe construction behaviors, and automatic ergonomic risk assessment for construction workers

TEACHING ASSISTANCE

Construction Engineering Management (Spring '18, '19: final year undergrad student)

Tutorials on Linear Programming and Application Tutorial, Green Labelling, and Construction Management Practices in China

Seminars on Fast Track, Value Management and Risk Management

IT and BIM for Construction (Fall '18, : 3rd year undergrad student)

Tutorials on BIM Introduction

Experimental tutorials on Revit 3D modelling

TECHNICAL SKILLS

Programming:	Python, Matlab, R
Library:	OpenCV, Pytorch
Text Editing:	TeX (LaTeX, BibTeX), MS Office
OS:	MS Windows family, Linux

SERVICE

Journal Peer Review

Computer and Education

Computer-aided Civil and Infrastructure Engineering

Service to University

2018 – present	Hall tutor, WuXian Hall, The Hung Hom Halls of Residence The Hong Kong Polytechnic University, Hong Kong
2015–2016	Undergraduate student advisor Tsinghua University, Beijing, China

PROFESSIONAL AFFILIATIONS

American Society of Civil Engineers (Student Membership)

Institute of Electrical and Electronics Engineers (Student Membership)