

BIOGRAPHICAL SKETCH

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NAME: Ko, Chien-Ho

POSITION TITLE: Research Professor & Director

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE (if applicable)	END DATE MM/YYYY	FIELD OF STUDY
National Taiwan Institute of Technology, Taipei, Taiwan	BS	06/1997	Construction Engineering
National Taiwan University of Science and Technology, Taipei, Taiwan	MS	05/1999	Construction Management
National Taiwan University of Science and Technology, Taipei, Taiwan	PHD	10/2002	Construction Management
Clemson University, Clemson, South Carolina	PHD Candidate	02/2021	Architectural Design
National Taiwan Institute of Technology, Taipei, Taiwan	Other training	06/1997	Certificate (Teacher Education Program)
The University of California at Berkeley, Berkeley, California	Postdoctoral Fellow	08/2005	Lean Construction
Clemson University, Clemson, South Carolina	Other training	12/2020	Certificate (Digital Ecologies Certificate Program)

A. Personal Statement

Dr. Chien-Ho Ko currently serves as a Research Professor in the Department of Civil, Environmental & Architectural Engineering and the Director at the Craig and Diane Martin National Center for Construction Safety at the University of Kansas (KU). Prior to KU, he was a full Professor of Civil Engineering, a visiting scholar at MIT, and a postdoctoral researcher at the University of California at Berkeley. Dr. Ko received his Ph.D. in Construction Management and is currently pursuing a second Ph.D. in Architectural Design at Clemson University, SC. A registered Professional Engineer of Fire Protection, he has previously served as a project manager for design-build projects. Prof. Ko has been conferred numerous academic awards, including best paper, outstanding professor, research, and teaching awards. He has published over 40 refereed journal papers, 70 conference papers, and acts as the Editor-in-Chief of the Journal of Engineering, Project, and Production Management (Scopus and Ei indexed). He also has participated as a Principal Investigator in over 40 research projects. Additionally, he is an inventor with more than 30 patents. Dr. Ko has served as a president for several institutes, including the ASCE Kansas Section, Taiwan Lean Construction Institute, Taiwan Industrial Robot Association, and the Association of Engineering, Project, and Production Management.

1. Maali O, Ko C, Nguyen P. Applications of Existing and Emerging Construction Safety Technologies. Automation in Construction. 2024; 158:105231. DOI: 10.1016/j.autcon.2023.105231
2. Al-Bayati A, Aramali V, Ko C. Assessing Usability of the Construction Safety Culture and Climate Framework: A Crucial Method for Advancing Construction Safety. Proceedings of 2024 Construction Research Congress, ASCE, Des Moines, Iowa, 417-424. 2024. DOI: 10.1061/9780784485293.042
3. Ko C, Depcik C, Hashemi M. Work Zone Geo-Fencing System. US Patent, Provisional patent no. 63/524,540. 2023 June 30.
4. Ko C, Abdulmajeeb H. Improving Construction Safety: Lessons Learned from COVID-19 in the United States. Sustainability. 2022 June 10; 14(12):7137. DOI: 10.3390/su14127137

B. Positions, Scientific Appointments and Honors

Positions and Scientific Appointments

2024 - 2025	President, ASCE Kansas Section, Wichita, KS
2023 - 2024	President-Elect, ASCE Kansas Section, Wichita, KS
2021 -	Research Professor & Director, The Craig and Diane Martin National Center for Construction Safety (NCCS), Department of Civil, Environmental & Architectural Engineering, University of Kansas, Lawrence, KS
2021 - 2021	Research Professor & Co-Director, The Craig and Diane Martin National Center for Construction Safety (NCCS), Department of Civil, Environmental & Architectural Engineering, University of Kansas, Lawrence, KS
2017 - 2018	Visiting Scholar, Massachusetts Institute of Technology, Cambridge, MA
2013 - 2019	Full Professor, National Pingtung University of Science and Technology, Department of Civil Engineering, Pingtung, Taiwan
2013 - 2019	President, Taiwan Industrial Robot Association, Taipei, Taiwan
2013 - 2014	President, Association of Engineering Project, and Production Management, Lawrence, KS
2012 - 2018	President, Taiwan Lean Construction Institute, Taipei, Taiwan
2011 -	Editor-in-Chief, Journal of Engineering, Project, and Production Management (EPPM-Journal), Lawrence, Kansas
2010 - 2013	Associate Professor, National Pingtung University of Science and Technology, Department of Civil Engineering, Pingtung, Taiwan
2009 - 2010	Chief of International Co-operation, National Pingtung University of Science and Technology, Office of International Affairs, Pingtung, Taiwan
2008 - 2019	Instructor, National Pingtung University of Science and Technology, Robotics Club, Pingtung, Taiwan
2008 - 2010	Assistant Professor, National Pingtung University of Science and Technology, Department of Civil Engineering, Pingtung, Taiwan
2005 - 2008	Assistant Professor, Da-Yeh University, Department of Industrial Engineering and Technology Management, Dacun, Taiwan
2004 - 2005	Post-Doctoral, Department of Civil and Environmental Engineering, The University of California at Berkeley, Berkeley, California
2002 - 2004	Construction Engineering Officer, Second Lieutenant, ROCA, Dependents Service Division, Ministry of National Defense, Taipei, Taiwan
1997 - 2002	Research Assistant, National Taiwan University of Science and Technology, Taipei, Taiwan
1997 - 1997	Student Teacher, Taipei Municipal Da-an Vocational High School, Taipei, Taiwan

Honors

2023	Included in Who's Who in American, Marquis Who's Who
2021	Included in Who's Who in the World, Marquis Who's Who
2020	Lifetime acceptance into Who's Who in the World, Marquis Who's Who (Top 3%)
2019	Excellence in Web-Added Course: Computer Programming Language, National Pingtung University of Science and Technology, Taiwan
2018	Excellent Teaching Award, 2018 Excellent and Innovative Course Competition, National Pingtung University of Science and Technology, Taiwan
2017	Best Paper Award, International Conference on Engineering, Project, and Production Management, Amman, Jordan
2017	2017 Albert Nelson Marquis Lifetime Achievement Award, Marquis Who's Who
2017	Gold Medal, 2017 Kaohsiung International Invention and Design EXPO, World Invention Intellectual Property Associations, Taiwan
2016	Best Presentation Award, Quality Management II Session, 7th International Conference on Engineering, Project, and Production Management, Bialystok, Poland
2016	Gold Medal, 2016 Taiwan International Invention and Design Fair (TIIDF), The Taiwan Institute of Knowledge Innovation, Taiwan

2016	Silver Medal, Taiwan International Invention and Design Fair (TIIDF), The Taiwan Institute of Knowledge Innovation, Taiwan
2016	Distinguished Teaching Award, National Pingtung University of Science and Technology, Taiwan
2015	Gold Medal, Kaohsiung International Invention and Design EXPO, World Invention Intellectual Property Associations, Taiwan
2015	Distinguished Engineering Professor Award, Chinese Institute of Engineers- Kaohsiung Chapter, Taiwan
2013	Top 100 Educators, International Biographical Centre, Cambridge, England
2012	Gold Medal for Taiwan, American Biographical Institute, Inc.
2011	Excellent Teaching Award, Department of Civil Engineering, National Pingtung University of Science and Technology, Taiwan
2010	The Da Vinci Diamond “For Inspirational Accomplishment”, International Biographical Centre, Cambridge, England
2009	Tatung System Technologies INC Enterprise Award, RFID Tendency Cup, Taipei Computer Association, Taiwan
2009	Best Market Value Patent Combination, Metal Industries Research & Development Centre, Taiwan
2009	First Position, Faculty research and development competition, National Pingtung University of Science and Technology, Taiwan
2009	Excellent Paper Award, National Pingtung University of Science and Technology and University of Science and Technology Beijing Joint Conference, Taiwan
2007	Teaching Excellence Award, Da-Yeh University, Taiwan
2007	Outstanding Teaching Materials Award, Da-Yeh University, Taiwan
2004	Government Funds of Study Abroad, Ministry of Education, Taiwan
2001	Science and Research Development Financial Support, Sinotech Engineering Foundation, Taiwan
1999	First Prize of Student Thesis Awards of Taiwan, Hong Kong, and Macau, The Hong Sze-Chuen Foundation of Public Culture and Education
1996	Lin Hsiung Zheng scholarship (Top scholarship in Taiwan), Lin Hsiung Zheng Foundation, Taiwan
1995	Second position in the student English speech competition, National Taiwan Institute of Technology, Taiwan
1995	Scholarship of the Department of Construction Engineering, National Taiwan Institute of Technology, Taiwan
1995	Lung-Shan Temple Scholarship, Lung-Shan Temple, Taiwan
1994	Scholarship of the Department of Construction Engineering, National Taiwan Institute of Technology, Taiwan

C. Contribution to Science

1. Dr. Ko is a pioneer in construction safety where he creates new knowledge and practical solutions to industry challenges. He has served as the Director of the Craig and Diane Martin National Center for Construction Safety (NCCS) at the University of Kansas (KU) since 2021. Since 2022, he has organized an annual Construction Safety Conference (CSC) that provides a unique platform for disseminating construction safety knowledge and translating these research findings into practical applications. Through the KU endowment’s permanent financial support, Dr. Ko organizes two roadway construction safety trainings per year. He also acts as the Editor-in-Chief to disseminate findings on construction safety by publishing a special issue on that same topic in the Journal of Engineering, Project, and Production Management every year. Finally, to attain real-world insight, Dr. Ko actively engages with the construction industry about modern safety challenges. He is currently working with more than 13 construction companies, providing innovative and practical solutions for improving construction safety in the workplace. His research results are announced at the annual NCCS Advisory Board Meetings and published in peer-reviewed journals and conferences. He also holds numerous patents for his research products and innovative ideas in improving construction safety.

- a. Maali O, Ko C, Nguyen P. Applications of Existing and Emerging Construction Safety Technologies. *Automation in Construction*. 2024; 158:105231. DOI: 10.1016/j.autcon.2023.105231
 - b. Al-Bayati A, Aramali V, Ko C. Assessing Usability of the Construction Safety Culture and Climate Framework: A Crucial Method for Advancing Construction Safety. *Proceedings of 2024 Construction Research Congress, ASCE, Des Moines, Iowa*, 417-424. 2024. DOI: 10.1061/9780784485293.042
 - c. Ko C, Depcik C, Hashemi M. Work Zone Geo-Fencing System. US Patent, Provisional patent no. 63/524,540. 2023 June 30.
 - d. Ko C, Abdulmajeeb H. Improving Construction Safety: Lessons Learned from COVID-19 in the United States. *Sustainability*. 2022 June 10; 14(12):7137. DOI: 10.3390/su14127137
2. Dr. Ko has accomplished a series of research on improving the production management of precast manufacturing using lean principles. Precast fabricators face many challenges when completing customer orders. Among them, demand variability is the biggest headache. In order to mitigate the impact of demand variability, this series of four phase studies considers the demand variability of the customer in the production schedule. Phase I uses fuzzy theory to establish the Buffer Evaluation Model (BEM) to evaluate the inventory buffer and time buffer required for each project. Continuing the development of results from the BEM developed in Phase I, Phase II uses multi-objective genetic algorithms to establish Lean Production Scheduling Model (LPSM). Phase III applies object-oriented and internet technology to develop a Precast Factory Enterprise Resource Planning System (PrecastERP). Lastly, Phase IV proposes a series of methods to mitigate the impact of demand variability on the precast factory. This series of studies improves the flexibility of material supply, allowing precast fabricators to deliver products just in time.
- a. Ko C, Tsai H. Management and Control Method for Construction Process. Invention Patent, Taiwan, Patent Number: I 659385. 2019 May 11.
 - b. Ko C. Material Transshipment for Precast Fabrication. *Journal of Civil Engineering and Management*. 2013 June; 19(3):335-347. DOI: 10.3846/13923730.2012.744771
 - c. Ko C, Wang S. Precast production scheduling using multi-objective genetic algorithms. *Expert Systems with Applications*. 2011; 38(7):8293-8302. DOI: 10.1016/j.eswa.2011.01.013
 - d. Ko C, Wang S. GA-based decision support systems for precast production planning. *Automation in Construction*. 2010 November; 19(7):907-916. DOI: 10.1016/j.autcon.2010.06.004
3. Understanding material and personnel locations in the construction site can help improve management performance. Dr. Ko uses Radio Frequency Identification (RFID) technology to calculate the locations of materials and personnel on the construction site. An RFID three-dimensional spatial positioning system is developed in three phases. Phase I establishes a facility and equipment maintenance management information system. In Phase II, an RFID spatial positioning algorithm that uses the Received Signal Strength Indicator (RSSI) and Gradient Decent Method is developed to analyze and locate the target positions. Phase III uses RF field strength to further improve the accuracy of RFID spatial positioning. The results from these first three phases of research have obtained a number of invention patents. Although these three phases of research have been able to accurately locate the location of construction site materials and personnel, the spatial rendering effect is not specific. Phase IV combines 3D-Web-GIS to display and locate the target spatial location. Application results show that the developed 3D-Web-GIS RFID spatial positioning system can track and locate construction site materials, tools, and personnel, improving construction site management performance.
- a. Ko C. Integrating RFID, web-based technology, and artificial intelligence in engineering management. *Scientia Iranica*. 2015; 22(2):299-312.
 - b. Ko CH. 3D-Web-GIS RFID location sensing system for construction objects. *Scientific World Journal*. 2013;2013:217972. PubMed Central PMCID: PMC3705755.
 - c. Ko C, Pan N, Chiou C. Web-based radio frequency identification facility management systems. *Structure and Infrastructure Engineering*. 2013 May; 9(5):465-480. DOI: 10.1080/15732479.2010.546804
 - d. Ko C. Device for Retrieving Data from A Radio Frequency Identification Tag. US Patent, Patent Number: US 7,967,870 B2. 2011 June 28.

4. Problems in construction management are complex, full of uncertainty, and vary with the environment. Dr. Ko is developing an Evolutionary Fuzzy Neural Inference Model (EFNIM) to facilitate decision-making in construction management using Genetic Algorithms (GAs), Fuzzy Logic (FL), and Neural Networks (NNs). In the formulated model, GAs are primarily used for optimization, FL for representing uncertainty and approximate reasoning, and NNs for fuzzy input-output mapping. One artificial and four real construction management problems are being conducted to demonstrate the applicability of the EFNIM. The developed model is one of the first to combine complementary AI techniques for problem-solving, and multiple AI models, applications, and studies are developed based on the EFNIM.
 - a. Ko C, Cheng M, Wu T. Evaluating Sub-Contractors Performance Using EFNIM. *Automation in Construction*. 2007 July; 16(4):525-530. DOI: 10.1016/j.autcon.2006.09.005
 - b. Cheng M, Ko C. A Genetic-Fuzzy-Neuro Model Encodes FNNs Using SWRM and BRM. *Journal of Engineering Applications of Artificial Intelligence*. 2006 December; 19(8):891-903. DOI: 10.1016/j.engappai.2006.02.002
 - c. Cheng M, Ko C. Object-Oriented Evolutionary Fuzzy Neural Inference System for Construction Management. *Journal of Construction Engineering and Management*, ASCE. 2003 July; 129(4):461-469. DOI: 10.1061/(ASCE)0733-9364(2003)129:4(461)
 - d. Ko C, Cheng M. Hybrid Use of AI Techniques in Developing Construction Management Tools. *Automation in Construction*. 2003 May; 12(3):271-281. DOI: 10.1016/S0926-5805(02)00091-2