

## **Kevin K. Han**

Dept. of Civil, Construction, and Environmental Engineering  
North Carolina State University  
Campus Box 7908, 425C Mann Hall  
2501 Stinson Dr., Raleigh NC 27695  
[kevin\\_han@ncsu.edu](mailto:kevin_han@ncsu.edu) | <http://go.ncsu.edu/carl>  
Office: 919-515-8719 | Mobile: 510-229-9648

### **EDUCATION**

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Univ. of IL, Urbana-Champaign (UIUC)	Civil Engineering	PhD	2016
UIUC	Computer Science	Master	2015
Univ. of CA, Berkeley (UCB)	Civil Engineering	MS	2012
UCB	Architecture/Structural Engin.	BA/Minor	2010

### **ACADEMIC POSITIONS**

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Assistant Professor	North Carolina State University (NCSU)	2016 - present
Substitute Instructor of Engineering	Parkland College, Champaign, IL	2016
Research/Teaching Assistant	UIUC	2013 - 2016

### **INDUSTRY EXPERIENCES**

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Lead Construction Management Engineer	Reconstruct, Inc.	2016
Intern (Research Role)	Caterpillar Inc., Champaign, IL	2015
Design/Field Engineer	SBTA Inc., Austin, TX	2010 - 2011
Global Intern	Hanwha E & C Corp., Seoul, Korea.	2010

### **AWARDS/HONORS**

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2 <sup>nd</sup> Best Poster Award (Advisee – Idris Jeelani), <i>2018 Construction Research Congress.</i>	Apr. 2018
2017 Outstanding Reviewer, <i>ASCE Computing in Civil Engineering.</i>	Mar. 2018
2016 Outstanding Reviewer, <i>ASCE Computing in Civil Engineering.</i>	Feb. 2017
2015 PMI Kerzner Scholarship, <i>Project Management Institute Education Foundation.</i>	Jul. 2015
Best Paper Award, <i>2015 ASCE International Workshop on Computing in Civil Engineering.</i>	Jun. 2015
Honorary Certificate of Appreciation, <i>2015 ASCE International Workshop on Computing in Civil Engineering.</i>	Jun. 2015
2015 Professional Engineers in Construction (PEC) George B. Hightower, P.E. Fellowship, <i>National Society of Professional Engineers (NSPE).</i>	Jun. 2015
2015 CMAA Chicago Chapter Scholarship, <i>Construction Management Association of America.</i>	May 2015
2015 AACE International Competitive Scholarship (National), <i>Associate for the Advancement of Cost Engineering.</i>	Apr. 2015
Inducted Member, <i>Tau Beta Pi the Engineering Honor Society.</i>	Dec. 2014
2014 AACE International Competitive Scholarship (Chicago-Midwest), <i>Associate for the Advancement of Cost Engineering.</i>	Aug. 2014
2 <sup>nd</sup> Place Poster Award, <i>2014 Construction Research Congress.</i>	May 2014
Fellow for East Asia & Pacific Summer Institutes, <i>National Science Foundation and National Research Foundation of Korea.</i>	Mar. 2014
2014 CCHRB Scholarship, <i>Chicago Committee on High Rise Buildings.</i>	Jan. 2014
Graduate Block Fellowship, <i>UCB.</i>	Aug. 2011

# Kevin K. Han

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## PATENTS

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Wear Measurement System Using Computer Vision, 2018

Submitted to U.S. Patent and Trademark Office.

Wear Measurement System Using Computer Model, 2018

Submitted to U.S. Patent and Trademark Office.

## PROFESSIONAL LICENSES & CERTIFICATES

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Certificate in Foundations of Teaching, UIUC May 2016

Certificate of Management of Technology, UCB May 2012

Engineer-in-Training, Texas Board of Professional Engineers, Austin, Texas. Apr. 2011

## PUBLICATIONS

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### Refereed Academic Journals Published or Accepted

- 12 Asadi, K., Ramshankar, H., Noghabae, M., and Han, K. (accepted). Real-Time Image Localization and Registration with BIM Using Perspective Alignment for Indoor Monitoring of Construction. *ASCE Journal of Computing in Civil Engineering*.
- 11 Asadi, K., Chen, P., Han, K., Wu, T., and Lobaton, E. (2019). LNSNet: Lightweight Navigable Space Segmentation for Autonomous Robots on Construction Sites. *Data*. Special Issue on Data Sensing and Analysis in Design, Construction, Operation, Monitoring, and Maintenance of Built Environments
- 10 Asadi, K., Bhavsar, U., Kundu, S., Mehta, P., Ramshankar, H., Samadi, S., Suraj, S., Han, K., Lobaton, E., and Wu, T., (2018). Vision-based Integrated Mobile Robotic System for Real-time Applications in Construction, *Automation in Construction*. V. 96, Pg. 470-482, doi.org/10.1016/j.autcon.2018.10.009.
- 9 Jeelani, I., Albert, A., and Han, K. (2018). Are Visual Search Patterns Predictive of Hazard Recognition Performance? Empirical Investigation Using Eye-tracking Technology. *ASCE Journal of Construction Engineering and Management*. Vol. 145, Issue 1. doi.org/10.1061/(ASCE)CO.1943-7862.0001589.
- 8 Jeelani, I., Han, K., and Albert, A. (2018). Automating and Scaling Personalized Safety Training Using Eye-tracking Data, *Automation in Construction*. Vol. 93, Pg. 63-77. doi.org/10.1016/j.autcon.2018.05.006.
- 7 Ramachandra, M., Monroe, J., Pranav, M., Han, K., Ham, Y., and Ranga Vatsavai, R. (2018). Real-Time Energy Audit of Built Environments: Simultaneous Localization and Thermal Mapping, *ASCE Journal of Infrastructure Systems*. Vol. 24, Issue 3, doi.org/10.1061/(ASCE)IS.1943-555X.0000431.
- 6 Han, K., and Golparvar-Fard, M. (2018). Geometry- and Appearance-based Reasoning of Construction Progress Monitoring, *ASCE Journal of Construction Engineering and Management*. Vol. 144, Issue 2, doi.org/10.1061/(ASCE)CO.1943-7862.0001428.
- 5 Han, K., and Golparvar-Fard, M. (2017). Crowdsourcing BIM-guided Collection of Construction Material Library from Site Photologs, *Journal of Visualization in Engineering*. Volume 5, No. 1, ISSN 2213-7459
- 4 Han, K., and Golparvar-Fard, M. (2017). Potential of Big Visual Data and Building Information Modeling for Construction Performance Analytics: An Exploratory Study, *Automation in Construction*. Volume 73, January 2017, Pages 184-198, ISSN 0926-5805.
- 3 Ham, Y., Han, K., Lin, J., and Golparvar-Fard, M. (2016). Visual Monitoring of Civil Infrastructure Systems via Camera-Equipped Unmanned Aerial Vehicles (UAVs): A Review of Related Works. *Visualization in Engineering*. Volume 4, No. 1, ISSN 2213-7459.
- 2 Han, K., Cline, D., and Golparvar-Fard, M. (2015). Formalized Knowledge of Construction Sequencing

for Visual Sensing-based Automated Progress Monitoring. *Advanced Engineering Informatics*. Volume 29, Issue 4, October 2015, Pages 889-901, ISSN 1474-0346.

- 1 Han, K., and Golparvar-Fard, M. (2015). Appearance-based Material Classification for Monitoring of Operation-level Construction Progress using 4D BIM and Site Photologs. *Automation in Construction*, Volume 53, May 2015, Pages 44-57, ISSN 0926-5805.

### Conference Proceedings with Full-length Papers (\*presentation by Han or advisee; ^refereed)

- 26^\* Jeelani, I., Ramshankar, H., Han, K. and Albert, A. (accepted). Real-time Hazard Proximity Detection – Localization of Workers Using Visual Data. *2019 ASCE International Conference on Computing in Civil Engineering*, Atlanta, GA. Jun. 17-19, 2019.
- 25^\* Asadi, K., Jain, K., Qin, Z., Sun, M., Noghabaei, M., Cole, J., Han, K., Lobaton, E. (accepted). Vision-based Obstacle Removal System for Autonomous Ground Robots Using Robotic Arm. *2019 ASCE International Conference on Computing in Civil Engineering*, Atlanta, GA. Jun. 17-19, 2019.
- 24^\* Noghabaei, M. and Han, K. (accepted). Virtual Manipulation in an Immersive Virtual Environment: Simulation of Virtual Assembly. *2019 ASCE International Conference on Computing in Civil Engineering*, Atlanta, GA. Jun. 17-19, 2019.
- 23^\* Asadi, K., Chen, P., Han, K., Wu, T., Lobaton, E. (accepted). Real-time Scene Segmentation Using a Light Deep Neural Network Architecture for Autonomous Robot Navigation on Construction Sites. *2019 ASCE International Conference on Computing in Civil Engineering*, Atlanta, GA. Jun. 17-19, 2019.
- 21^\* Jeelani, I., Asadi, K., Ramshankar, H., Han, K. and Albert, A. (accepted). Real-World Mapping of Gaze Fixations Using Instance Segmentation for Road Construction Safety Applications. *2019 Transportation Research Board (TRB)*. Washington, D.C., Jan. 13-17, 2019.
- 20^\* Jeelani, I., Han, K., and Albert A. (2018). Automating Analysis of Construction Workers' Viewing Patterns for Personalized Safety Training and Management, *35th International Symposium on Automation and Robotics in Construction*, Berlin, Germany. July 20-25, 2018.
- 19^\* Asadi, K., Ramshankar, H., Pullagurla, H., Bhandare, A., Shanbhag S., Mehta, P., Kundu, S., Han, K., Lobaton, E., and Wu, T. (2018). Building an Integrated Mobile Robotic System for Real-Time Applications in Construction, *35th International Symposium on Automation and Robotics in Construction*, Berlin, Germany. July 20-25, 2018.
- 18^\* Noghabaei, S., Balali, V., Heydarian, A., and Han, K. (2018). Improved Stakeholder Communication and Visualizations: Real-time Interaction and Cost Estimation within Immersive Virtual Environments, *2018 Construction Research Congress*, New Orleans, LA. April 2-5, 2018.
- 17^\* Asadi Boroujeni, K., and Han, K. (2018). BIM-guided Real-time Localization and Mapping through Perspective Alignment, *2018 Construction Research Congress*, New Orleans, LA. April 2-5, 2018.
- 16^\* Jeelani, I., Han, K., and Albert, A. (2018). Scaling Personalized Safety Training through Automated Feedback Generation, *2018 Construction Research Congress*, New Orleans, LA. April 2-5, 2018.
- 15^\* Ramachandra, M., Pranav, M., Han, K., and Ham, Y. (2017). Real-time Thermal Sensing and 3D Modeling for Building Energy Vulnerability Detection, *Proc., Int'l Conference on Maintenance and Rehabilitation of Constructed Infrastructure Facilities*, Seoul, South Korea, July 19-21, 2017.
- 14^\* Asadi Boroujeni, K., and Han, K. (2017). Image-to-BIM Alignment using Perspective Detection for Automated Progress Detection, *Proc., ASCE Int'l Workshop on Computing in Civil Engineering*, Seattle, WA June 25-27, 2017.
- 13^\* Jeelani, I., Han, K., and Albert, A. (2017). Development of a Personalized Augmented Reality Safety

- Training Environment, *Proc., ASCE Int'l Workshop on Computing in Civil Engineering*, Seattle, WA June 25-27, 2017.
- 12^ Hossain-McKenzie, S., Han, K., and Davis, K. (2016). Generator Control Action Classification Based on Localized Voltage Measurements, *48<sup>th</sup> North American Power Symposium*, Denver, CO, Sep. 18 – 19, 2016.
- 11^ Han, K., Muthukumar, B. and Golparvar-Fard, M. (2016). Enhanced Appearance-based Material Classification for Monitoring of Operation-level Construction Progress through Removal of Occlusions, *2016 Construction Research Congress*, San Juan, Puerto Rico, May 31 - Jun. 2, 2016.
- 10^ Han, K., and Golparvar-Fard, M. (2015). Information Requirement for Model-based Construction Monitoring via Emerging Big Visual Data and BIM: A Case Study, *6th International Conference on Construction Engineering and Project Management*, Busan, Korea, Oct. 11-14, 2015.
- 9^ Han, K., and Golparvar-Fard, M. (2015). The Role of Integrated Plan and As-Built Models in Achieving Smooth Flow of Production in Construction, *International Conference on Innovative Production and Construction (IPC 2015)*, Perth, Australia, July 28-31, 2015.
- 8\*^ Han, K., and Golparvar-Fard, M. (2015). BIM-assisted Structure from Motion for Analyzing and Visualizing Construction Progress Deviations through Daily Site Images and BIM. *Proc., ASCE Int'l Workshop on Computing in Civil Engineering*, Austin, TX June 21-23, 2015. (*Honorary Certificates of Appreciation & Selected Student Demo*)
- 7^ Lin, J., Han, K., and Golparvar-Fard, M. (2015). A Framework for Model-driven Acquisition and Analytics of Visual Data Using UAVs for Automated Construction Progress Monitoring. *Proc., ASCE Int'l Workshop on Computing in Civil Engineering*, Austin, TX June 21-23, 2015. (*Best Paper Award*)
- 6 Han, K., Lin, J., and Golparvar-Fard, M. (2015). A Formalism for Utilization of Autonomous Vision-Based Systems and Integrated Project Models for Construction Progress Monitoring. *Conference on Autonomous and Robotic Construction of Infrastructure*, Ames, IA, June 2-3, 2015.
- 5^ Lin, J., Han, K., Fukuchi, Y., Eda, M., and Golparvar-Fard, M. (2015). Image-based Quality Monitoring for Alignment and Placement of Prefabricated Bridge Structural Components. *Proc., 2<sup>nd</sup> Int'l Conference on Civil and Building Engineering Informatics*, Tokyo, Japan. Apr. 22-24, 2015.
- 4^ Han, K., and Golparvar-Fard, M. (2014). Multi-Sample Image-based Material Recognition and Formalized Sequencing Knowledge for Operation-Level Construction Progress Monitoring. *Proc., Int'l Conference for Computing in Civil and Building Engineering*, Orlando, FL June 23-25, 2014.
- 3\*^ Han, K., and Golparvar-Fard, M. (2014). Automated Monitoring of Operation-Level Construction Progress Using 4D BIM and Daily Construction Photologs, *2014 Construction Research Congress*, Atlanta, GA. May 19-21, 2014.
- 2^ Han, K., Gwak, J., Golparvar-Fard, M., Saidi, K., Cheok, G., Franaszek, M., and Lipman, R. (2013). Vision-based Field Inspection of Concrete Reinforcing Bars. *Proc., 13<sup>th</sup> Int'l Conference on Construction Applications of Virtual Reality*, London, UK. Oct. 30-31, 2013.
- 1^ Han, K., Igarashi, Z., Fukuchi, Y., and Golparvar-Fard, M. (2013). Image-based Quality Monitoring for Alignment and Placement of Prefabricated Bridge Structural Components. *Proc., 1<sup>st</sup> Int'l Conf. on Civil & Building Engineer. Informatics*, Tokyo, Japan. Nov. 7-8, 2013.

## PRESENTATIONS

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### Invited Talks and Lectures at/to Other Organizations

- 10 Korean Hydro and Nuclear Power Co., LTD (KHNP) & CNEFS Research Planning Meeting. *Visual*

- 9 *Sensing, Robotics, and BIM for Construction Performance Monitoring*, NCSU, March 25, 2019
- 9 Electric Power Research Institute (EPRI)'s Visit for Exchange of Research Capabilities, *Visual Sensing, Robotics, and BIM for Construction Performance Monitoring*, NCSU, March 8, 2019
- 8 SMiRT 25 Planning Workshop and Meeting: Lessons Learned from Construction of Nuclear Power Plants, *Visual Sensing, Robotics, and BIM for Construction Performance Monitoring*, NCSU, October 24, 2018
- 7 Korea Railroad Research Institute, *Model-based Visual Data Analytics for Automation in Construction Management*, Seoul, S. Korea, Dec. 27, 2017
- 6 Chung-Ang University, *Model-based Visual Data Analytics for Automation in Construction Management*, Seoul, S. Korea, July 18, 2017
- 5 Image-based 3D Reconstruction 101. *Caterpillar at Champaign Research Park*, Champaign, IL. June 8, 2015.
- 4 Overview of the State-of-Art 4D Scheduling and IT-based Progress Monitoring and Control Technologies (webinar), *CE541 Construction Project Scheduling and Control*, University of Tennessee, Knoxville, TN. Nov. 25, 2014.
- 3 Automated Monitoring of Construction Progress Using 4D BIM and Daily Construction Photologs. *Seoul National University*, Seoul, Korea. Aug. 5, 2014.
- 2 Automated Monitoring of Operation-Level Construction Progress Using 4D BIM and Daily Construction Photologs. *EAPSI – NSF & NRF of Korea*, Press Center, Seoul, Korea Aug. 8, 2014.
- 1 Automated Monitoring of Construction Progress Using 4D BIM and Daily Construction Photologs. *Chicago Committee on High Rise Buildings*, Chicago, IL, Feb. 13, 2014.

### Other Presentations

- 9 Presenter, Smart Construction, *Smart, Safe, and Sustainable Infrastructure – CCEE Open House to Freshmen Students*. NCSU. Sept. 20, 2018.
- 8 Presenter, Smart Construction, *Smart Cities – CCEE Open House to Freshmen Students*. NCSU. Sept. 28, 2017.
- 7 Guest Lecture, BIM for Improving the Construction Process. *CE367 Mechanical and Electrical Systems in Buildings*. NCSU. Apr. 25, 2017.
- 6 Industry Lecture, An Overview of BIM and How It is Changing the Construction Industry, *Design Your Own Continuing Education Experience*, McKimmon Center at NCSU, Dec. 2, 2016.
- 5 Guest Lecture, BIM for Improving the Construction Process. *CE263 Introduction to Construction Engineering*. NCSU. Nov. 21, 2016.
- 4 Guest Lecture, BIM for Improving the Construction Process. *CE297 Introduction to Sustainable Infrastructure*. NCSU. Oct. 10, 2016.
- 3 Selected Student Demo. BIM-assisted Structure from Motion for Analyzing and Visualizing Construction Progress Deviations through Daily Site Images and BIM. *Proc., ASCE Int'l Workshop on Computing in Civil Engineering*, Austin, TX June 21-23, 2015.
- 2 Guest Lecture, Visual Sensing in Construction – Progress Monitoring and Quality Control. *CEE 498 Sensor and Measurement*. UIUC. Apr. 23, 2014.
- 1 Research Presentation, Automated Monitoring of Operation-Level Construction Progress Using 4D BIM and Daily Construction Photologs. *Sound Bites*, the Graduate Student Advisory Committee, UIUC. Nov. 7, 2013.