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Del E. Webb School of Construction

Arizona State University

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Tempe, Arizona 85287-3005, U.S.A.

Education:

- Ph.D. Civil and Environmental Engineering, Carnegie Mellon University, U.S.A (2009)
- M.S. Bridge Engineering, Tongji University, China P.R. (2005)
- B.S. Civil Engineering, Tongji University, China P.R. (2002)
- One-Year German Program Certificate, Tongji University, China P.R. (1998)

Professional Appointments:

- Associate Professor, Del E. Webb School of Construction within the School of Sustainable Engineering and the Built Environment, Arizona State University, U.S.A. (August 2018 – present)
- Assistant Professor, Del E. Webb School of Construction within the School of Sustainable Engineering and the Built Environment, Arizona State University, U.S.A. (July 2012 – August 2018)
- Assistant Professor, Department of Civil and Construction Engineering, Western Michigan University, U.S.A. (August 2010 – July 2012)
- Post-Doctoral Researcher, Department of Civil, Environmental and Geodetic Engineering, The Ohio State University, U.S.A. (September 2009 – July 2010)
- Graduate Assistant, Department of Civil and Environmental Engineering, Carnegie Mellon University, U.S.A. (July 2005 – August 2009)
- Research Assistant, Department of Bridge Engineering, Tongji University, China P.R. (September 2002 – June 2005)

Industrial Experience:

- Consultant, as an expert on LiDAR, Remote Sensing and Photogrammetry, WHPacific Inc., U.S.A. (December 2013 – March 2014)
- Consultant, as an expert on LiDAR and Engineering for the City of Phoenix Steel Tank Program, HDR Inc., U.S.A. (November 2013 – June 2014)
- Consultant, as an expert on RFID and Navigation Engineering for DPR Construction Research Project “Automatic Mobile Device Geo-Referencing for Supporting Real-Time Inspections on Construction Sites,” DPR Construction, U.S.A. (April 2013 – May 2014)

- Field Bridge Engineer, Yangguang Bridge Project in Yiwu, Zhejiang Province, Tongji Bridge Design Institute, China P.R. (May 2004 – June 2004)
- Field Bridge Engineer, Tongyang Canal Bridge Project in Nantong, Jiangsu Province, Tongji Bridge Design Institute, China P.R. (December 2003 – January 2004)
- Structural engineer, Bridge Design and Construction Monitoring projects, Tongji Bridge Design Institute, China P.R. (May 2003 – June 2003)
- Intern, team leader of a group of three students working on three bridge design examples for a bridge design manual, Highway Survey and Design Institute of Anhui Province, Hefei, China, P.R. (March 2002 – July 2002)

Professional Licensure:

- PE Professional Registration, Civil Engineering (Construction), Arizona, USA, Certificate No. 62519 (July 2016 – present)

Areas of Expertise:Teaching

- Sensor technologies for construction management
- Geospatial and remote sensing techniques for civil infrastructure systems
- Computer vision and data analytics for construction management
- Building information modeling
- Field data collection and management for construction management
- Life cycle cost management and analysis
- Construction project scheduling and cost estimating
- Civil systems analysis, systems engineering and management science
- Civil infrastructure management
- Bridge engineering and inspection
- Remote sensing for structural health monitoring
- Computational methods for civil engineering applications
- Image processing and data mining in civil engineering

Research

- Computer vision and pattern analysis techniques for automated diagnosis and prognosis of bridges, building structures and construction sites
- Computational models for human and team reliability & performance analysis in construction productivity and safety management
- Predictive control of accelerated construction projects through integrated use of sensing, modeling, and digital human models
- Automatic imagery data collection and sensor planning for high-quality data collection in built environments
- Managing and optimizing spatial data processing workflows for rapid and reliable data-driven analysis of structures and job sites
- Spatial statistics and change analysis for bridge management

- Automated spatial change analysis for progress monitoring and change management of construction projects
- Automated sensory data-driven construction workflow analysis and productivity diagnosis

Honors and Awards:

- Best Paper Award, 2nd Place, the International Workshop on Computing in Civil Engineering (IWCCE 2017), Seattle, June 25-27, 2017 (Corresponding Author)
- NSF Faculty Early Career Development (CAREER) Award, National Science Foundation, 2015 - 2020
- NSF Travel Grant for Junior Construction Faculty, Construction Engineering Conference Sponsored by the National Science Foundation (NSF), Seattle, March, 2014
- CEE Recent Alumnus Achievement Award, Department of Civil and Environmental Engineering, Carnegie Mellon University, Pittsburgh, September, 2013
- Best Academic Poster Award of Construction Industry Institute (CII) Annual Conference, Construction Industry Institute (CII), Chicago, July, 2011
- The 2009 Construction Research Congress Best Paper Award in Organizational Issues, Risk, and Safety, American Society of Civil Engineers (ASCE), Construction Research Council, Seattle, April, 2009
- Chi Epsilon Honor Society Member, Pittsburgh, March, 2009
- Fenves Travel Grant, Carnegie Mellon University, Pittsburgh, December, 2008
- Travel Grant for Young Engineer, The International Association for Bridge and Structural Engineering (IABSE) Weimar, Germany, August 25, 2007
- Phi-Kappa-Phi Honor Society Member, Phi-Kappa-Phi, Pittsburgh, February, 2007
- Carnegie Institute of Technology (CIT) Dean's Fellowship, Carnegie Mellon University, August, 2006
- Jidian Liang Fellowship, Carnegie Mellon University, December, 2005
- Guanghua Excellent Graduate Fellowship, Tongji University, December, 2004
- Scholarship for Academic Excellence Student, Tongji University, 1998 – 2001

PUBLICATIONS, INTELLECTUAL PROPERTY, AND PRESENTATIONS**Summary of Publications and Intellectual Property (September 2018)**

- Scopus – 957 Citations, H index = 14
- Google Scholar – 1,484 Citations, H index = 18
- Abstracts: 8
- Books Co-Edited: 1
- Book Chapters Published: 2
- Invited Book Chapters Published: 1
- Invited Book Chapters Submitted / In Preparation: 1
- Co-Editor for Thematic Journal Issues: 0
- Invited Journal Publications: 1

- Invited Conference Papers: 6
- Refereed Conference Papers: 68
- Technical Papers (unrefereed): 8
- Total Journal Publications (Published, In Press, and/or Accepted): 26, 0, 0
- Journal Publications (Published, In Press, and /or Accepted) from ASU: 19, 0, 0
- Journal Publications Prior to ASU (All Published): 7
- Journal Editorials: 0
- Manuscripts Submitted / In Revision from ASU: 3
- Manuscripts in Preparation from ASU (to be submitted before May 2017): 3
- Intellectual Property: Patents 0; Patents pending 1

Summary of Presentations:

- Invited Presentations – External: 40
- Invited Presentations – ASU Internal: 6
- Invited Conference Presentations, including students: 11
- Peer-reviewed Conference Presentations, including students: 42
- Contributed Conference Presentations: 5

Legend:

- (*) Corresponding Author
- **Bold Font:** ASU Ph.D. Student
- Underline: ASU Master's Student
- (#) ASU Undergraduate Student
- (∞) Other/Visiting Undergraduate Student
- (×) ASU Postdoctoral Researcher
- ‡ High School Student
- (+) Equal Contributions (if not equal include % of participation)
- IF=Impact Factor, C=number of citations on August 2017

Refereed Journal Publications:

My philosophy is to have students as first authors of publications. I am the corresponding author in all manuscripts where I have a major leading role. This might not apply to review articles.

1. **Kalasapudi, V. S.**, Tang, P.*, Xiong, W., and Shi, Y. (2018). “A multi-level 3D data registration approach for supporting reliable spatial change classification of single-pier bridges.” *Advanced Engineering Informatics*, Elsevier, 38, 187–202, DOI: 10.1016/j.aei.2018.06.010
2. Chen, K., Lu, W.*, Xue, F., Tang, P., and Li, L. H. (2018). “Automatic building information model reconstruction in high-density urban areas: Augmenting multi-source data with architectural knowledge.” *Automation in Construction*, Elsevier, 93, 22–34, DOI: 10.1016/j.autcon.2018.05.009

3. Xiong, W.*, Kong, B., Tang, P., and Ye, J. S. (2018) “Vibration-Based Identification for the Presence of Scouring of Cable-Stayed Bridges.” *ASCE Journal of Aerospace Engineering*, DOI: 10.1061/(ASCE)AS.1943-5525.0000826.
4. Xiong, W.*, Kong, B., Tang, P., Cai, C. S., and Ye, J. S. (2017) “Identification of Bridge Scour Depth by Tracing the Dynamic Behaviors of Superstructures.” *KSCE Journal of Civil Engineering*, DOI: 10.1007/s12205-017-1409-9.
5. **Rahman, R. A.**, Ayer, S. K.*, Tang, P., and Eicher, M. (2017). “Building Information Modelling skills: a social network and job advertisement-based comparative analysis.” *Engineering Project Organization Journal*, Vol. 7, pp 21- 36, DOI: 10.25219/epoj.2017.00103.
6. **Zhang, C.**, Tang, P.*, Cooke, N., Buchanan, V., Yilmaz, A., Germain, S.S., Boring, R.L., Akca-Hobbins, S., Gupta, A. (2017) “Human-Centered Automation for Resilient Nuclear Power Plant Outage Control.” *Elsevier Journal of Automation in Construction*, DOI: 10.1016/j.autcon.2017.05.001.
7. **Kalasapudi, V. S.**, Tang, P.*, and Turkan, Y. (2017) “Computationally efficient change analysis of piece-wise cylindrical building elements for proactive project control.” *Elsevier Journal of Automation in Construction*, DOI:10.1016/j.autcon.2017.04.001.
8. Xiong, W.*, Tang, P., Kong, B., and Cai, C. S. (2017) “Computational Simulation of Live-bed Bridge Scour Considering Suspended Sediment Loads.” *ASCE Journal of Computing in Civil Engineering*, DOI: 10.1061/(ASCE)CP.1943-5487.0000689, 04017040.
9. **Zhang, C.**, **Kalasapudi, V. S.**, and Tang, P.* (2016) “Rapid Data-Quality-Oriented 3D Imaging Planning for Dynamic Construction Environments.” *Elsevier Journal of Advanced Engineering Informatics*, Volume 30, Issue 2, April 2016, Pages 218–232, DOI:10.1016/j.aei.2016.03.004.
10. **Zia Ud Din***, Tang, P. (2016). “Automatic Logical Inconsistency Detection in the National Bridge Inventory.” *Procedia Engineering*, 145, 729 – 737, DOI: 10.1016/j.proeng.2016.04.093.
11. Xiong, W.*, Tang, P., Kong, B., and Cai, C. S. (2016) “Reliable Bridge Scour Simulation using Eulerian Two-Phase Flow Theory.” *ASCE Journal of Computing in Civil Engineering*, 10.1061/(ASCE)CP.1943-5487.0000570, 04016009.
12. Tang, P.*, Chen, G., Shen, Z., and Ganapathy, R. (2016). “A Spatial-Context-Based Approach for Automated Spatial Change Analysis of Piece-Wise Linear Building Elements.” *Computer-Aided Civil and Infrastructure Engineering*, Volume 31, Issue 1, pages 65–80, January 2016, DOI: 10.1111/mice.12174.
13. Tang, P.*, Shen, Z., Olson, M. P., and Ariaratnam, S. T. (2015). “Time Series Analysis of Hydraulic Data for Automated Productivity Monitoring of Pilot Tube Microtunneling.” *Journal of Pipeline Systems Engineering and Practice*, American Society of Civil Engineers, 04015022, DOI: 10.1061/(ASCE)PS.1949-1204.0000225
14. **Kalasapudi V.S.**, Tang, P.*, Zhang, C., Diosdado, J., and Ganapathy, R. (2015). “Adaptive 3D Imaging and Tolerance Analysis of Prefabricated Components for Accelerated Construction.” *Procedia Engineering*, 118, 1060–1067, DOI: 10.1016/j.proeng.2015.08.549
15. Tang*, P., and Bittner, R. B. (2014). “Use of Value Engineering to Develop Creative Design Solutions for Marine Construction Projects.” *ASCE Journal of Practice Periodical on*

- Structural Design and Construction (SPECIAL ISSUE: Construction Engineering: Leveraging Project and Career Success), Volume 19, Pages 129 - 136, DOI: 10.1061/(ASCE)SC.1943-5576.0000184
16. Li*, R., S. He, B. Skopljak, X. Meng, Tang, P., A. Yilmaz, C. Oman, M. Banks, and Sunah Kim, (2014), "A Multi-sensor Integration Approach toward Astronaut Navigation for Landed Lunar Missions." *Journal of Field Robotics*, Volume 31, Issue 2, pages 245–262, March/April 2014, DOI: 10.1002/rob.21488
 17. Anil, E. *, Tang, P., Akinci, B., and Huber, D. (2013). "Deviation analysis method for the assessment of the quality of the as-is Building Information Models generated from point cloud data." *Automation in Construction*, 35, 507–516, November 2013, DOI: 10.1016/j.autcon.2013.06.003
 18. Tang, P. *, and Akinci, B. (2012). "Automatic execution of workflows on laser-scanned data for extracting bridge surveying goals." *Advanced Engineering Informatics - Elsevier*, 26(4), 889-903, October 2012, DOI: 10.1016/j.aei.2012.07.004
 19. Cho, Y. K. *, Wang, C., Tang, P., & Haas, C. T. (2012). "Target-Focused Local Workspace Modeling for Construction Automation Applications." *ASCE Journal of Computing in Civil Engineering*, Volume 26, Issue 5, Pages 661-670, September 2012, DOI:10.1061/(ASCE)CP.1943-5487.0000166
 20. Tang, P. *, and Akinci, B. (2012). "Formalization of workflows for extracting bridge surveying goals from laser-scanned data." *Automation in Construction - Elsevier*, 22(3), 306–319, March 2012, DOI: 10.1016/j.autcon.2011.09.006
 21. Tang, P. *, and Akinci, B., Huber, D. (2011). "Characterization of Laser Scanners and Algorithms for Detecting Flatness Defects on Concrete Surfaces." *ASCE Journal of Computing in Civil Engineering*, Volume 25, Issue 1, Pages 31-42, January 2011, DOI: 10.1061/(ASCE)CP.1943-5487.0000073
 22. Li, R. *, He, S., Chen, Y., Tang, M., Tang, P., Di, K., Matthies, L., Arvidson, R. E., Squyres, S. W., Crumpler, L. S., and others. (2011). "MER Spirit rover localization: Comparison of ground image–and orbital image–based methods and science applications." *J. Geophys. Res.*, American Geophysical Union, Volume 116, Issue E7, E00F16.
 23. Taneja*, S., Akinci, B., Garrett, J. H., Soibelman, L., Ergen, E., Pradhan, A., Tang, P., Berges, M., Atasoy, G., Liu, X., Seyed Mohsen Shahandashti, and Anil, E. B. (2010). "Sensing and Field Data Capture for Construction and Facility Operations." *ASCE Journal of Construction Engineering and Management*, ASCE, 137(10), pages 870–881.(doi: [http://dx.doi.org/10.1061/\(ASCE\)CO.1943-7862.0000332](http://dx.doi.org/10.1061/(ASCE)CO.1943-7862.0000332))
 24. Tang, P., Huber, D. *, Akinci, B., Lipman, R., Lytle, A. (2010). "Automatic Reconstruction of As-Built 3D Building Information Models from Laser-Scanned Point Clouds: A Review of Related Techniques." *Automation in Construction - Elsevier*, Volume 19, Issue 7, November 2010, Pages 829-843, November 2010, DOI: 10.1016/j.autcon.2010.06.007 (*Most Cited Article of "Automation in Construction" among all articles published after 2009, Cited 224 times according to Google Scholar, and 166 times according to Scopus as of 12/27/2015*)
 25. Tang, P. *, Akinci, B., and Huber, D. (2009). "Quantification of Edge Loss of Laser Scanned Data at Spatial Discontinuities." *Automation in Construction - Elsevier*, Volume 18, Issue 8, December 2009, Pages 1070-1083, December 2009, DOI: 10.1016/j.autcon.2009.07.001

26. Kiziltas*, S., Akinci B., Ergen, Esin., Tang, P., and Gordon, C. (2008). "Technological assessment and process implications of field data capture technologies for construction and facility/infrastructure management." *ITcon* Vol. 13, Special Issue: Sensors in Construction and Infrastructure Management, pg. 134-154, <http://www.itcon.org/2008/10>. (Invited)
27. **Alsafouri, S.**, Ayer, S.*, and Tang, P. (in review). "Mobile VDC Adoption in Practice." *Journal of Automation in Construction – Elsevier*, submitted in March 2017.
28. **Zhang, C.**, Liao, P., Tang, P.*, Ren, Y. (in review) "A New Crowdsourcing Approach for Rule-Based Hazard Detection in Complex Construction Workspaces," *Elsevier Journal of Advanced Engineering Informatics*, submitted in September, 2018.
29. **Kalasapudi, V. S.**, Tang, P.*, and Xiong, W. (in review) "Reducing the Search Space of Loading Conditions of Structures using Qualitative Spatial Change Reasoning." *ASCE Journal of Aerospace Engineering*, submitted in October 2017.
30. **Zhang, C.**, Tang, P.* (in preparation) "Automatic Prioritization of Tasks for Targeted Management in Accelerated Construction Project with Contingencies." *International Journal of Project Management - Elsevier*, to submit in December 2018.
31. **Chen, J., Zhang, C.**, Tang, P.* (in preparation) "Automatic 3D Tracking of Multiple Workers for Reliable and Predictive Construction Activity Analysis." *International Journal of Automation in Construction - Elsevier*, to submit in December 2018.
32. **Sun, Z., Zhang, C.**, Tang, P.* (in preparation) "Automatic Speech Recognition and Linguistic Analysis for Reducing Communication Errors in Air Traffic Control." *International Journal of Project Management - Elsevier*, to submit in December 2018.

Books:

1. Lin, K. Y., El-Gohary, N., and Tang, P. "Computing in Civil Engineering 2017," *Proceedings of the 2017 International Workshop on Computing in Civil Engineering*, American Society of Civil Engineers, ASCE Library, DOI: 10.1061/9780784480847 (Volume 1 - "Smart Safety, Sustainability, and Resilience," 466 pp), 10.1061/9780784480823 (Volume 2 - "Information Modeling and Data Analytics," 487 pp), 10.1061/9780784480830 (Volume 3 – "Sensing, Simulation, and Visualization," 415 pp).

Book Chapters:

1. Tang, P.*, Vick, S., **Chen, J.**, (in preparation). "Infrastructure Computer Vision Surveying," *Infrastructure Computer Vision*, Editors: Brilakis, I., Haas, C., Publisher: Elsevier, first draft submitted in May 2018.
2. Tang, P.*, **Zhang, C.**, Yilmaz, A., Cooke, N., Boring, R. L., Chasey, A., Vaughn, T., Jones, S., Gupta, A., and Buchanan, V. (2016). "Automatic Imagery Data Analysis for Diagnosing Human Factors in the Outage of a Nuclear Plant." *Digital Human Modeling: Applications in Health, Safety, Ergonomics and Risk Management*, Volume 9745 of the series *Lecture Notes in Computer Science*, Springer International Publishing, 604–615.
3. Kiziltas, S.*, Akinci, B., Ergen, E., Tang, P., and Pradhan, A. (2008). "Field Technologies and Their Impact on Management of Supply Chains." *Construction Supply Chain Management Handbook*, Taylor and Francis Group, LLC.

Monographs:

1. Tang, P. (2009). "Extraction of Surveying Goals from Point Clouds Obtained from Laser Scanners to Support Bridge Inspection." PhD Dissertation, Department of Civil and Environmental Engineering, Carnegie Mellon University, Publisher: ProQuest, UMI Dissertations Publishing, Ann Arbor, MI.
2. Tang, P. (2005). "Bridge CAD Technology Research Based on Ontological Engineering." Master's Thesis, Department of Bridge Engineering, Tongji University, China P.R.
3. Tang, P. (2002). "Design and Analysis of Continuous Curved Beam Bridges." Bachelor's Thesis, School of Civil Engineering, Tongji University, China P.R.

Refereed Reports and Technical Manuals:

1. Tang, P.*, Song, M. (2014). "Detailed Geometric Assessment of Steel Tanks based on dense 3D Laser Scanning Point Clouds." Research Report. Submitted to HDR Inc. and City of Phoenix, May 31, 2014.
2. Tang, P.*, Grau, D., Shen, Z. (2014). "Indoor Localization Techniques for Supporting Real-Time Applications on Construction Sites." Annual Research Report. Submitted to DPR Construction, Phoenix, AZ, April 30, 2014.
3. Li, R., Tang, P.*, Yilmaz, Al., M. Banks and K. Bhasin. (2010). "Enhancement of Spatial Orientation Capability of Astronauts on the Lunar Surface." Third Year Annual Report. Submitted to the National Space Biomedical Research Institute (NSBRI) Program of NASA, The Ohio State University, Columbus, June 30, 2010.
4. Akinci, B., Huber, D., and Tang, P.* (2009). "Active Utilization of 3D Imaging Technologies throughout the Life Cycle of Facilities." Research Report Submitted to General Services Administration (GSA), Carnegie Mellon University, Pittsburgh, July 30, 2009.
5. Akinci, B., Huber, D., and Tang, P.* (2009). "Quality Assessment of As-built Building Information Models using Deviation Analysis." Research Report Submitted to General Services Administration (GSA), Carnegie Mellon University, Pittsburgh, June 30, 2009.
6. Akinci, B., Huber, D., and Tang, P.* (2008). "Extending/Agumenting Current Building Information Models with Scanned Data." Research Report Submitted to National Institute for Standards and Technology (NIST), Carnegie Mellon University, Pittsburgh, August 31, 2008.
7. Akinci, B., Huber, D., and Tang, P.* (2007). "Evaluation of Capabilities of Different Laser Scanners and Data Processing Software Systems for Quality Control." Research Report Submitted to Bombardier Transportation, Carnegie Mellon University, Pittsburgh, June 30, 2007.

Non-Refereed Conference Publications:

1. **Kalasapudi, V. S.**, and Tang, P.* (2015). "Automated Spatial Change Detection and Control of Curvilinear Building Components Using 3D Laser Scanning Data." 2015 CII Annual Conference, Boston, MA (poster).
2. Tang, P.*, and Akinci, B. (2011). "Formalization and Characterization of Workflows for Extracting Bridge Surveying Goals from Laser-Scanned Data." 2011 CII Annual Conference, Chicago, IL (poster, best poster award).

3. Li, R.*, Wang, W., Li, D., Karahayit, O., Tang, P., Coates, A. J., Muller, J. P., Griffiths, A. D., Paar, G., and Oberst, J., “ESA ExoMars Rover PanCam Pre-launch Modeling and Accuracy Assessment for Localization and Topographic Mapping”, European Planetary Science Congress 2010, 19 – 24 September 2010, Rome, Italy. (extended abstract)
4. Li, R.*, Wang, W., He, S., Hwangbo, J.W., Chen, Y., Tang, P., Meng, X., Choung, Y., Lawver, J., Thomas, P., Robinson, M., and the LROC Team, “Precision Photogrammetric Modeling of LROC NAC Cameras and Topographic Products.” Annual Meeting of the Lunar Exploration Analysis Group, 14 – 16 September 2010, Washington, DC (extended abstract)
5. He, S.*, Yan, L., Chen, Y., Hwangbo, J., Tang, M., Wang, W., Tang, P., Lawver, J., Li, R., Thomas, P., and Robinson, M. “OrbiterMapper: Photogrammetric Modeling of LROC NAC Cameras and High-Resolution Stereo Lunar Surface Mapping.” NASA Lunar Science Forum 2010, July 20-22, 2010, Moffett Field, CA. (poster)
6. Li, R.*, Wang, W., Tang, M., Tang, P., Coates, A., Muller, J.-P., Griffiths, A., Paar, G., and Oberst, J. (2010). “ESA ExoMars Rover Localization and Topographic Mapping: Pre-Launch PanCam Modeling and Error Analysis.” Proceedings of the 41th Lunar and Planetary Science Conference, March 1-5, 2010, The Woodlands, Texas. (2-pages extended abstract)
7. Li, R.*, He, S., Tang, P., Skopljak, B., Yilmaz, A., Banks, J. J. M. S., Oman, C., Sands, O. S., and Bhasin, K. (2010). “Development of a Lunar Astronaut Spatial Orientation and Information System.” Proceedings of the 41th Lunar and Planetary Science Conference, March 1-5, 2010, The Woodlands, Texas. (2-pages extended abstract)
8. Akinci, B.*, and Tang, P. (2007). “Bridge Inspection and Asset Management Using 3D Imaging Technologies.” Western Pennsylvania Transportation Research Forum Engineers' Society of Western Pennsylvania Pittsburgh (4-pages extended abstract).

Innovation – Patents, Copyrights and Other Innovative Products:

1. “Systems And Methods for Automated Spatial Change Detection and Control of Buildings and Construction Sites using Three-Dimensional Laser Scanning Data” Tang P. and **Kalasapudi V.** Attorney’s Docket No.: 055743-542655, submitted in April 2016 (pending)

Refereed Conference Publications:

1. **Sun, Z., Zhang, C., Tang, P.*, Wang, Y., and Liu, Y.** (2018). “Bayesian Network Modeling of Airport Runway Incursion Occurring Processes for Predictive Accident Control.” *Proceeding of the 35th CIB W78 2018 Conference - IT in Design, Construction, and Management*, E. Mutis and T. Hartmann, eds., CIB, Chicago, Illinois, USA.
2. Wang, Y., Liu, Y.*, **Sun, Z.,** and Tang, P. (2018). “A Bayesian-entropy Network for Information Fusion and Reliability Assessment of National Airspace Systems.” Proceeding of the 10th Annual Conference of the Prognostics and Health Management Society, PHM Society, Philadelphia, Pennsylvania.
3. **Sun, Z., Chen, J., Li, R., Li, S.,** Tang, P.*, and Liu, Y. (2018). “Automated Human Performance Monitoring for Air Traffic Control Safety through Bayesian Network Modeling and Video Surveillance.” Proceedings of the 36th International System Safety Conference, System Safety Society, Phoenix, AZ, 1–10.

4. Gard, N. A., **Chen, J.**, Tang, P., and Yilmaz, A.* (2018). “Deep Learning and Anthropometric Plane Based Workflow Monitoring by Detecting and Tracking Workers.” ISPRS TC I Midterm Symposium Innovative Sensing - From Sensors to Methods and Applications, Boris Jutzi, ed., ISPRS, Karlsruhe, Germany, 1–6.
5. Shi, Y., Du, J.*, Tang, P., and Zhao, D. (2018). “Characterizing the Role of Communications in Teams Carrying Out Building Inspection.” Construction Research Congress 2018, American Society of Civil Engineers, Reston, VA, 554–564.
6. **Yin, Z.**, and Tang, P.* (2018). “Diagnosing Supervision Failures in Preventing Falling Accidents in China.” Construction Research Congress 2018, American Society of Civil Engineers, Reston, VA, 443–453.
7. **Sun, Z.**, **Zhang, C.**, and Tang, P.* (2018). “Simulation-Based Optimization of Communication Protocols for Reducing Delays during Nuclear Power Plant Outages.” Construction Research Congress 2018, American Society of Civil Engineers, Reston, VA, 455–464.
8. **Chen, J.**, Tang, P.*, and Xiong, W. (2018). “Characterizing Point Cloud Data Density for Spatial Change-Based Maintenance Planning of Civil Infrastructure Systems.” Construction Research Congress 2018, American Society of Civil Engineers, Reston, VA, 776–785.
9. **Zhang, C.**, **Sun, Z.**, Tang, P.*, Germain, S. W. St., and Boring, R. L. (2017). “Simulation-based Optimization of Resilient Communication Protocol for Nuclear Power Plant Outages,” Proceedings of the 1st International Conference on Human Error, Reliability, Resilience, and Performance, Los Angeles, CA, USA, July 17 – 21, 2017.
10. **Chen, J.**, Tang, P.*, Rakstad, T. E. (2017). “Integrated Analysis of Aerial and Terrestrial Imagery Data for Efficient and Effective Water Loss Mapping of a Canal System,” Proceeding of ASCE’s Pipelines 2017 Conference, S. T. Ariaratnam and B. Klein, eds., American Society of Civil Engineers, Phoenix, AZ, USA, August 6 – 9, 2017.
11. **Zhang, C.**, Tang, P.*, Germain, S. W. St., **Zhang, P.**, and **Ji, W.** (2017). “Agent-Based Simulation for Monitoring Critical Path Change in Nuclear Power Plant Outages,” Proceedings of the inaugural World Transport Convention, Beijing, China, June 4 – 6, 2017.
12. **Zhang, C.**, Tang, P.*, Liao, P., and Ren, Y. (2017). “Imagery-Based Risk Assessment Using Crowdsourcing Technology in Complex Workspaces,” 2017 ASCE Workshop of Computing in Civil Engineering, Seattle, WA, USA, June 25 – 27, 2017.
13. **Chen, J.**, **Zhang, C.**, Tang, P.* (2017). “Geometry-based Optimized Point Cloud Compression Methodology for Construction and Infrastructure Management,” 2017 ASCE Workshop of Computing in Civil Engineering, Seattle, WA, USA, June 25 – 27, 2017.
14. Xiao, R.C.*, Lian, Y., Sun, B., Zhao, X.W., Liu, Z., Tang, P. (2017). “Method of Bridge Structural Analysis Based on Bridge Information Modeling,” 2017 ASCE Workshop of Computing in Civil Engineering, Seattle, WA, USA, June 25 – 27, 2017.
15. Shi, Y., Xiong, W., **Kalasapudi, V. S.**, Geng, C., **Zhang, C.**, Tang, P.* (2017). “Automated Change Diagnosis of Single-Column-Pier Bridges based on 3D Imagery Data,” 2017 ASCE Workshop of Computing in Civil Engineering, Seattle, WA, USA, June 25 – 27, 2017.
16. **Kalasapudi, V. S.**, Tang, P.* (2017). “A Robust Registration Algorithm for Automatic and Reliable Geometric Change Detection of Bridges using 3D Laser Scanning Data.”

- Proceedings of the 11th International Bridge and Structures Management Conference, Mesa, AZ, USA, April 25 – 27, 2017.
17. Zhang, J.*, Bao, Q., Duan, X., Lu, S., Xue, L., Shi, R., and Tang, P. (2016). “Collaborative Scientific Workflow Composition as a Service: An Infrastructure Supporting Collaborative Data Analytics Workflow Design and Management.” 2016 IEEE 2nd International Conference on Collaboration and Internet Computing (CIC), IEEE, 219–228.
 18. **Hobbins, S.**, Cooke, N. J.*, and Tang, P. (2016). “Analyzing Licensee Event Reports for Improved Teamwork and Nuclear Power Plant Safety During Outages.” The 22nd Occupational Health Week “Knowledge-Based Networks, Worldwide Connections for the Global Workplace,” Corporación de Salud Ocupacional y Ambiental, Medellin, Colombia. (*invited paper*)
 19. **Rahman, R. A., Alsafouri, S.**, Tang, P., Ayer, S. K.* (2016) “Building Information Modeling Skills for Career Success.” Academic Interoperability Coalition (AIC) 10th BIM Academic Symposium & Job Task Analysis Review, Gainesville, FL, USA, 4 – 5 April 2016.
 20. Tang, P.*, **Zhang, C.**, Yilmaz, A., Cooke, N., Chasey, A., Boring, R. L., Vaughn, T., and Jones, S. (2016) “Automatic Imagery Data Analysis for Diagnosing Human Factors in the Outage of a Nuclear Plant.” Proceedings of the HCI International 2016 Conference, Toronto, Canada, 17 - 22 July 2016 (*invited paper*).
 21. **Rahman, R. A., Alsafouri, S.**, Tang, P., Ayer, S. K.* (2016) “Comprehending Building Information Modeling Skills of Project Managers based on Social Media Analysis.” International Conference on Sustainable Design, Engineering and Construction, Tempe, AZ, USA, 18 – 20 May 2016.
 22. **Din, Z. U.**, Tang, P.* (2016) “Automatic Logical Inconsistency Detection in the National Bridge Inventory.” International Conference on Sustainable Design, Engineering and Construction, Tempe, AZ, USA, 18 – 20 May 2016.
 23. **Zhang, C.**, Tang, P.*, Yilmaz, A., Cooke, N., Chasey, A., Boring, R. L., Germain, S. W. St., Vaughn, T., and Jones, S. (2016) “Video-based Crane-Related Workflow Control Framework for Nuclear Power Plant Outages.” International Symposium on Automation and Robotics in Construction (ISARC 2016), Auburn, Alabama, USA, July 18 – 21, 2016.
 24. **Kalasapudi, V. S.**, Tang, P.*, and Du, J. (2016). “Automatic Correlated Vibration Pattern Analysis for Rapid Remote Assessment of Civil Infrastructures.” Proceedings of the 2016 Construction Research Congress – Old and New Construction Technologies Convene in a Historic Setting, Maldonado-Fortunet F., eds., ASCE, San Juan, Puerto Rico, May 31 – June 2, 2016.
 25. **Alsafouri, S.**, Ayer, S.*, and Tang, P. (2015). “Mobile VDC Adoption in Practice.” The 15th International Conference on Construction Applications of Virtual Reality (CONVR), October 5-7, 2015, Banff, Alberta, Canada.
 26. **Zhang C.**, and Tang, P.* (2015). “Visual Complexity Analysis of Sparse Imageries for Automatic 3D Imaging Planning in Dynamic Environments.” 2015 ASCE Workshop of Computing in Civil Engineering, W. J. O’Brien, ed., American Society of Civil Engineers, Austin, TX, USA, June 21 – 23, 2015, pp. 271-279. DOI: 10.1061/9780784479247.034

27. **Kalasapudi, V. S.**, and Tang, P.* (2015). “Automated Tolerance Analysis of MEP Components Using 3D Point Clouds for Adaptive Construction Quality Control.” 2015 ASCE Workshop of Computing in Civil Engineering, W. J. O’Brien, ed., American Society of Civil Engineers, Austin, TX, USA, June 21 – 23, 2015, pp. 57-65. DOI: 10.1061/9780784479247.008
28. **Kalasapudi, V. S.**, and Tang, P.* (2015). “Condition diagnostics of steel water tanks using correlated visual patterns.” Proceedings of ICSC15: The Canadian Society for Civil Engineering 5th International/11th Construction Specialty Conference, T. M. Froese, L. Newton, F. Sadeghpour, and D. J. Vanier, eds., University of British Columbia, Vancouver, Canada. June 7-10.
29. **Zhang, C.**, and Tang, P.* (2015). “A divide-and-conquer algorithm for 3D imaging planning in dynamic construction environments.” Proceedings of ICSC15: The Canadian Society for Civil Engineering 5th International/11th Construction Specialty Conference, T. M. Froese, L. Newton, F. Sadeghpour, and D. J. Vanier, eds., University of British Columbia, Vancouver, Canada. June 7-10.
30. **Kalasapudi, V. S.**, Tang, P.*, Zhang, C. Y., Diosdado, J., and Ganapathy R. (2015) “Adaptive 3D Imaging and Tolerance Analysis of Prefabricated Components for Accelerated Construction.” International Conference on Sustainable Design, Engineering and Construction, Chicago, IL, USA, 10 – 13 May 2015.
31. **Kalasapudi, V. S.**, Turkan, Y., and Tang, P.* (2014). “Toward Automated Spatial Change Analysis of MEP Components using 3D Point Clouds and As-Designed BIM Models.” 2014 Workshop on 3D Computer Vision in the Built Environment (Hosted in conjunction with the 2014 International Conference on 3D Computer Vision), D. Huber and B. Akinici, eds., IEEE Computer Society, Tokyo, Japan, December 8, 2014 (*Invited Paper*)
32. Tang, P.*, Grau, D., Ganapath, R., Diosdad, J. & **Abbaszadegan, A.** (2014). “Workflow Stabilization with Fine-Grained Work Packaging and Near Real-Time Progress Monitoring” In: Kalsaas, B.T., Koskela, L. & Saurin, T.A., 22nd Annual Conference of the International Group for Lean Construction. Oslo, Norway, 25-27 Jun 2014. pp 739-750.
33. **Abbaszadegan, A.**, Grau, D.*, Tang, P., and Ganapathy, R. (2014). “A Novel Project Controls Approach to Accurately Estimate, Monitor, and Stabilize Work Flow.” Proceedings of the International Conference on Computing in Civil and Building Engineering - 2014, R. Issa and I. Flood, eds., ASCE, Orlando, Florida, USA, June 23 – 25, 2014.
34. Tang, P.*, Song, M., Xiao, C., and Thomure, T. (2014). “Detailed Geometric Assessment of Steel Tanks based on Dense 3D Laser Scanning Point Clouds.” 87th Annual AZ Water Conference, AZ Water Association, Phoenix, AZ, May 9, 2014
35. Shen, Z., and Tang, P.* (2014). “Time-Quality Analysis of Spatial Data Processing for Bridge Management.” Proceedings of the International Conference on Computing in Civil and Building Engineering - 2014, R. Issa and I. Flood, eds., ASCE, Orlando, Florida, USA, June 23 – 25, 2014.
36. Song, M., Shen, Z., and Tang, P.* (2014). “Data Quality Oriented 3D Laser Scan Planning.” Proceedings of the 2014 Construction Research Congress Construction Research Congress 2014 - Construction in a Global Network, D. Castro and Javier Irizarry, eds., ASCE, Atlanta, GA, Pages 984-993, May 19, 2014

37. Shen, Z., Tang, P.*, and Ariaratnam, S. T. (2014). “Analyzing Abnormal Cycles of Pilot Tube Microtunneling through Pattern Recognition in Time-Series Data of Hydraulic Pressure.” Proceedings of the 2014 Construction Research Congress Construction Research Congress 2014 - Construction in a Global Network, D. Castro and Javier Irizarry, eds., ASCE, Atlanta, GA, Pages 994-1003, May 19, 2014.
38. Tang, P.*, Shen, Z., Olson, M., and Ariaratnam, S. T. (2013). “Automated Productivity Analysis of Pilot Tube Microtunneling Installations through Workflow Recognition in Time-Series Data of Hydraulic Pressure.” Proceeding of The 4th International Conference on Pipelines and Trenchless Technology for Construction (ICPTT 2013), M. Najafi and B. Ma, eds., American Society of Civil Engineers, Xi’an, China, P.R. (presented on 2013 conference, to be included in 2014 proceeding) November 20, 2014
39. Tang, P.*, and Rasheed, S. H. (2013). “Simulation for Characterizing a Progressive Registration Algorithm Aligning As-Built 3D Point Clouds Against As-Designed Models.” Proceedings of the 2013 Winter Simulation Conference - Simulation: Making Decisions in a Complex World, R. Pasupathy, S.-H. Kim, A. Tolk, R. Hill, and M. E. Kuhl, eds., IEEE, Washington, D.C., Pages 3169 – 3180, December 8-11, 2013, DOI: 10.1109/WSC.2013.6721683 (*invited paper*)
40. Tang, P.*, Shen, Z., & Ram Ganapathy. (2013). “Automated Spatial Change Analysis of Building Systems Using 3D Imagery Data.” In CIB W78 2013: 30th International Conference on Applications of IT in the AEC Industry. Beijing, China: CIB, October 15, 2013, URL: <http://www.huzhenzhong.net/CIBW78Papers/html/files/3-1pdf/86.pdf>
41. Tang, P.*, Shen, Z., Kannan, O., and Cho, Y. K. (2013). “As-Built Error Modeling for Effective 3D Laser Scanning on Construction Sites.” 2013 ASCE Workshop of Computing in Civil Engineering, I. Brilakis, ed., American Society of Civil Engineers, Los Angeles, CA, USA, June 23 – 25, 2013.
42. Golparvar-Fard, M.*, Tang, P., Cho, Y. K., and Siddiqui, M. K. (2013). “Challenges in Architecture/Engineering/Construction and Facility Management Industry for Data and Information Visualization.” 2013 ASCE Workshop of Computing in Civil Engineering, I. Brilakis, ed., American Society of Civil Engineers, Los Angeles, CA, USA, June 23 – 25, 2013. (*invited paper*)
43. Tang, P.*, and Rasheed, S. H. (2013). “Progressive Registration of LiDAR Data and Building Information Models for Construction Management.” Proceeding of the International LiDAR Mapping Forum, Denver, Colorado, United States, February 12, 2013.
44. Tang, P.*, Olson, M., Shen, Z., and Ariaratnam, S. T. (2013). “Automated Monitoring of Pilot Tube Microtunneling Installations through Pattern Recognition in Time-Series Data of Hydraulic Pressure.” Proceeding of ASCE’s Pipelines 2013 Conference, M. Najafi and B. Ma, eds., American Society of Civil Engineers, Fort Worth, TX, USA, June 23 – 26, 2013.
45. Tang, P.*, Kannan, O., Wang, J., Oh, J.-S., and Kwigizile, V. (2013). “Statistical Identification of Items Important for Evaluating Bridge Conditions.” Proceeding of the 92nd TRB Annual Meeting (CD – ROM), Transportation Research Board, Washington, D.C., 14, January 15, 2013.

46. Tang, P.*, and Alnajjar, M. (2012). "Hierarchical Sampling for Efficient and Comprehensive Community Connectivity Analysis: A Michigan Case." 2012 ASCE Workshop of Computing in Civil Engineering, Clearwater Beach, FL, USA, June 17-20, 2012.
47. Tang, P.*, Aktan, H. M., and Polasek, J. (2012). "Integrating Sensing Technology and Building Information Modeling into a Construction Engineering Curriculum." 2012 ASEE Annual Conference, San Antonio, TX, June 10 – 13, 2012.
48. Tang, P.*, and Alaswad, F. S. (2012). "Sensor Modeling of Laser Scanners for Automated Scan Planning on Construction Jobsites." Construction Research Congress 2012, Amr Kandil and H. Cai, eds., ASCE, West Lafayette, IN, May 21 - 23, 2012.
49. Tang, P.*, and Pradhan, A. (2012). "Automating and Optimizing Spatial Data Processing Workflows for Civil Infrastructure Inspection." Construction Research Congress 2012, Amr Kandil and H. Cai, eds., ASCE, West Lafayette, IN, May 21 - 23, 2012.
50. Attanayake, U.*, Tang, P., Servi, A., and Aktan, H. M. (2011). "Non-Contact Bridge Deflection Measurement: Application of Laser Technology." Proceedings of the International Conference on Structural Engineering Construction and Management 2011 (ICSECM 2011), Peradeniya, Sri Lanka, December 15 – 17, 2011.
51. Tang, P.*, Anil, E. B., Akinci, B., and Huber, D. (2011). "Efficient Quality Assessment of As-Is Building Information Models and 3D Laser-Scanned Data", 2011 ASCE Workshop of Computing in Civil Engineering, Miami, FL, USA, June 19 – 22, 2011.
52. Anil, E. B.*, Tang, P., Akinci, B., and Huber, D. (2011). "Assessment of Quality of As-Is Building Information Models Generated from Point Clouds Using Deviation Analysis", Society for Imaging Science and Technology (IS&T) and SPIE Electronic Imaging Science and Technology, San Jose, California, USA, January 23 – 27, 2011.
53. Li, R.*, Yan, L., He, S., Hwangbo, J., Chen, Y., Tang, M., Wang, W., Tang, P., Lawver, J., Thomas, P., and Robinson, M. (2010) "Photogrammetric Techniques for Terrain Model Generation from LROC NAC Images." ISPRS Commission IV workshop on Planetary Mapping, Orlando, FL, pp8, December, 2010.
54. Li, R.*, He, S., Skopljak, B., Jiang, J., Tang, P., Yilmaz, A., Banks, M., Sands, O. S., and Oman, C. "On-Suit Navigation Information System for Manned Lunar Landing Missions." ISPRS Commission IV workshop on Planetary Mapping, Orlando, FL, USA, December, 2010.
55. Li, R.*, Yan, L., He, S., Hwangbo, J., Chen, Y., Tang, M., Wang, W., Tang, P., Lawver, J., Thomas, P., and Robinson, M. "Photogrammetric Techniques for Terrain Model Generation from LROC NAC Images." ISPRS Commission IV workshop on Planetary Mapping, Orlando, FL, USA, December, 2010.
56. Li, R.*, Skopljak, B., Yilmaz, A., He, S., Tang, P., Jiang, J., "A Spatial Orientation and Information System for Indoor Spatial Awareness", 2nd ACM SIGSPATIAL International Workshop on Indoor Spatial Awareness, San Jose, CA, USA, November 2, 2010.
57. Li, R.*, He, S., Skopljak, B., Jiang, J., Tang, P., Yilmaz, A., Banks, M., and Oman, C. (2010). "Development of a Lunar Astronaut Spatial Orientation and Information System (LASOIS)." ASPRS 2010 Annual Conference, San Diego, California, 10pp, April 26 – 30, 2010.

58. Atasoy, G.*, Tang, P., Zhang, J., and Akinci, B. (2010). "Visualizing Laser Scanner Data for Bridge Inspection." 27th International Symposium on Automation and Robotics in Construction (ISARC 2010), Bratislava, Slovakia, June 25 – 27, 2010.
59. Huber, D.*, Akinci, B., Tang, P., Adan, A., Okorn, B., and Xiong, X. (2010). "Using Laser Scanners for Modeling and Analysis in Architecture, Engineering, and Construction." 44th International Conference on Information Sciences and Systems, Princeton, NJ. March 17-19, 2010. (*invited paper*)
60. Tang, P.*, Akinci, B., and Huber, D. (2010). "Semi-Automated As-Built Modeling of Light Rail System Guide Beams." ASCE Construction Research Congress 2010, Banff, Alberta, Canada, May 8-10, 2010.
61. Atasoy, G.*, Tang, P., and Akinci, B. (2009). "A Comparative Study on the Use of Laser Scanners for Construction Quality Control and Progress Monitoring Purposes." CIB W078 26th International Conference - Managing IT in Construction, Istanbul, Turkey, October 1 – 3, 2010.
62. Tang, P.*, and Akinci, B. (2009). "Extracting Surveying Goals from Point Clouds to Support Construction and Infrastructure Inspection." ASCE Construction Research Congress 2009, Seattle, USA. (*Acceptance rate: 53%, Best Paper Award*), April 5 – 7, 2009.
63. Tang, P.*, Akinci, B., and Huber, D. (2009). "Characterization of Three Algorithms for Detecting Surface Flatness Defects from Dense Point Clouds." Society for Imaging Science and Technology (IS&T) and SPIE Electronic Imaging Science and Technology, San Jose, California, USA, Volume 7239, DOI: 10.1117/12.805727, January, 2009.
64. Tang, P.*, and Akinci, B. (2008). "Automated Measurement Extraction from Laser Scanned Point Clouds to Support Bridge Inspection." IABSE Symposium 2008, Helsinki, Finland, June, 2008.
65. Tang, P.*, Akinci, B., and James H. Garrett, J. (2007). "Laser Scanning for Bridge Inspection and Management." IABSE Symposium 2007, Weimar, Germany, September, 2007.
66. Tang, P.*, Huber, D., and Akinci, B. (2007). "A Comparative Analysis of Depth Discontinuity and Mixed Pixel Detection Algorithms." The 6th International Conference on 3-D Digital Imaging and Modeling, IEEE, Montréal, Québec, Canada. (*Acceptance rate: 38%, selected for full presentation*), August 21 – 23, 2007.
67. Tang, P.*, Xiao, R. (2004). "Component Oriented Framework for Distributed System with Application to Bridge Engineering", Proceedings of the 2nd CIB Student Chapter's International Symposium, pp.697- 708, October 2004.
68. Tang, P.*, Xiao R., (2004). "A Review of Researches Pertaining to Bridge Integrated CAD and Some New Trends", Proceedings of the 16th National Academic Conference on Bridge Engineering, pp.254-261(in Chinese), May 2004.

Magazine Articles:

1. Tang, P.*, **Kalaspudi, V. S.** (2015) "Automatic Diagnosis of Civil Infrastructures using Correlated Visual Changes in LiDAR Data." LiDAR Magazine, Vol. 5 No. 6.
2. Tang, P.*, **Zhang, C.**, and **Kalaspudi, V. S.** (2015) "Real-Time LiDAR Data Collection Planning Method." LiDAR Magazine, Vol. 5 No. 7.

Invited Talks on National or International Meetings:

1. “Intelligent Data-Driven Risk Management of Civil Infrastructure Systems through Big Data Analytics and Human Computation,” Tsinghua Summer Workshop on Construction Engineering and Management, Tsinghua University, July 2nd, 2018, Beijing, China (Invited)
2. “Automatic Multi-Level 3D Data Registration for Reliable Spatial Change Classification of Single-Pier Bridges,” TRB AHD35 Standing Committee on Bridge Management Annual Meeting, January 10, 2018, Washington, D.C. (Invited)
3. “Intelligent Data-Driven Risk Management of Civil Infrastructure Systems through Big Data Analytics and Human Computation,” School of Civil Engineering at Guangzhou University, Guangzhou, China, December 15th, 2017 (Invited)
4. “Human-Cyber-Physical-Systems Engineering for Robust Shutdown Control of Aging Civil Infrastructures,” School of Civil Engineering at Huazhong University of Science and Technology, Wuhan, China, June 1st, 2017 (Invited).
5. “Human-Cyber-Physical-Systems Engineering for Robust Shutdown Control of Aging Civil Infrastructures,” Invited Speech of the 1st International Workshop on Sustainability of Critical Civil Infrastructures – National Natural Science Foundation of China, June 9th, 2017 Beijing, China (Invited)
6. “Human-Cyber-Physical-Systems Engineering for Robust Shutdown Control of Aging Civil Infrastructures,” Keynote Speech for 2017 Transportation Research Congress, May 25th, 2017 Beijing, China (Invited)
7. “Human-Cyber-Physical-Systems Engineering for Robust Shutdown Control of Civil Infrastructures,” An online webinar published as part of webinar series,” TRB Straight to Recording for All: Towards Cyber Physical Systems in Construction,” October 14th, 2016 (Invited)
8. “Automated 3D laser scan planning and change analysis.” Computer Vision Workshop for the 33th International Symposium on Automation and Robotics in Construction (ISARC 2016), Auburn University, July 13th, 2016 (Invited)
9. “Imagery Data Collection and Analytics for Collaborative Construction Project Management.” School of Building Engineering at Chang’an University, Xi’an, China, June 6th, 2016 (Invited).
10. “3D Imaging and Spatial Information Workflows for A/E/C Domain Applications.” School of Civil Engineering at Huazhong University of Science and Technology, Wuhan, China, May 27th, 2016 (Invited).
11. “Automated Change Analysis of Buildings, Bridges, and Construction Sites Using 3D Laser Scanning Technology.” The 13th Annual Construction in Indian Country (CIIC) National Conference, Phoenix, U.S.A., April 26th, 2016 (Invited)
12. “SWARM: Computational Models for Spatial Data-Driven Civil Infrastructure and Built Environment Informatics.” Distinguished Guest Lecture Series for Civil Engineering Graduate Students at Northeastern University, Boston, U.S.A., February 9th, 2016 (Invited).
13. “SWARM: Computational Models for Spatial Data-Driven Civil Infrastructure and Built Environment Informatics.” Lecture Series for Graduate Students of Construction Management at Tianjin University, Tianjin, China, December 4th, 2015 (Invited).

14. "SWARM: Computational Models for Spatial Data-Driven Civil Infrastructure and Built Environment Informatics." The 432th PhD Symposium of Tsinghua University, Beijing, China, November 28th, 2015 (Invited).
15. "SWARM: Computational Models for Spatial Data-Driven Civil Infrastructure and Built Environment Informatics." Lecture Series for Graduate Students of the College of Surveying and Geo-Informatics at Tongji University, Shanghai, China, July 24th, 2015 (Invited).
16. "Increasing Productivity through Integrated Dimensional Change Detection and Control." Fiotech 2015th Anniversary, Technology Conference & Showcase, Boca Raton Resort, Florida, April 14th, 2015 (Invited)
17. "Use of Value Engineering to Develop Creative Design Solutions for Marine Construction Projects." NSF 2014 Construction Engineering Conference: Leveraging Project and Career Success, Seattle, WA, March 27, 2014 (Invited).
18. "Adaptive 3D Imaging and Change Analysis of Civil Infrastructures." North America-East Asia Workshop on Big Data Analytics for Infrastructure and Building Sustainability and Resilience (IBSR) Research, Beijing, China, P.R., September 19-21, 2014 (Invited).
19. "Simulation for Characterizing a Progressive Registration Algorithm Aligning As-Built 3D Point Clouds Against As-Designed Models." 2013 Winter Simulation Conference, Washington, D.C., December 2013 (Invited).
20. "Spatial Data Analytics for Civil Infrastructure Management." Seminar for Graduate Students, Chang'An University, Xi'an, China, October 15th, 2013 (Invited).
21. "Spatial Data Analytics for Civil Infrastructure Management." Seminar for Graduate Students, The Hong Kong University of Science & Technology, Hong Kong, August 20th, 2013 (Invited).
22. "Challenges in Architecture/Engineering/Construction and Facility Management Industry for Data and Information Visualization." 2013 ASCE Workshop of Computing in Civil Engineering, Los Angeles, CA, USA, June 2013 (Invited).
23. "Trade-Offs among Accuracy, Precision, and Cost of Using 3D Imaging Technologies", TRB Lectern Session: Three-Dimensional Geospatial Revolution (event number 446), January 14, 2013, Washington, D.C. (Invited).
24. "Efficient and Effective Uses of 3D Imaging Systems and Information Models for Construction and Facility Management", TRB Workshop: Using Information Technology to Support Better Construction Management (event number 162), January 22, 2012, Washington, D.C. (Invited).
25. "Formalization of Workflows for Extracting Bridge Surveying Goals from Laser-Scanned Data", SPAR International 2011, Houston, Texas, March, 2011 (Invited).
26. "Reducing Spatial Disorientation Risks to Astronauts in Manned Missions", ASMA 81st Annual Scientific Meeting, Phoenix, Arizona, May, 2010 (Invited).
27. "Integrating 3D Imaging and Building Information Model for the Automation of Bridge Inspection." Department of Bridge Engineering, Tongji University, Shanghai, China, P.R. July 2008 (Invited).

Conference Presentations:

1. “Characterizing Point Cloud Data Density for Spatial Change-Based Maintenance Planning of Civil Infrastructure Systems.” Construction Research Congress 2018, American Society of Civil Engineers, Reston, VA, April 2nd, 2018.
2. “Simulation-Based Optimization of Communication Protocols for Reducing Delays during Nuclear Power Plant Outages.” Construction Research Congress 2018, American Society of Civil Engineers, Reston, VA, April 2nd, 2018.
3. “Diagnosing Supervision Failures in Preventing Falling Accidents in China.” Construction Research Congress 2018, American Society of Civil Engineers, Reston, VA, April 2nd, 2018.
4. “Automated Human Performance Monitoring for Air Traffic Control Safety through Bayesian Network Modeling and Video Surveillance.” Proceedings of the 36th International System Safety Conference, System Safety Society, Phoenix, AZ, August 14th, 2018.
5. “Simulation-based Optimization of Resilient Communication Protocol for Nuclear Power Plant Outages,” the 1st International Conference on Human Error, Reliability, Resilience, and Performance, Los Angeles, CA, USA, July 17 – 21, 2017.
6. “Integrated Analysis of Aerial and Terrestrial Imagery Data for Efficient and Effective Water Loss Mapping of a Canal System,” ASCE’s Pipelines 2017 Conference, Phoenix, AZ, USA, August 6 – 9, 2017.
7. “Agent-Based Simulation for Monitoring Critical Path Change in Nuclear Power Plant Outages,” World Transport Convention, Beijing, China, June 4 – 6, 2017.
8. “Imagery-Based Risk Assessment Using Crowdsourcing Technology in Complex Workspaces,” 2017 ASCE Workshop on Computing in Civil Engineering, Seattle, WA, USA, June 25 – 27, 2017.
9. “Geometry-based Optimized Point Cloud Compression Methodology for Construction and Infrastructure Management,” 2017 ASCE Workshop on Computing in Civil Engineering, Seattle, WA, USA, June 25 – 27, 2017.
10. “Automated Change Diagnosis of Single-Column-Pier Bridges based on 3D Imagery Data,” 2017 ASCE Workshop on Computing in Civil Engineering, Seattle, WA, USA, June 25 – 27, 2017.
11. “A Robust Registration Algorithm for Automatic and Reliable Geometric Change Detection of Bridges using 3D Laser Scanning Data.” the 11th International Bridge and Structures Management Conference, Mesa, AZ, USA, April 25 – 27, 2017.
12. “Automatic Imagery Data Analysis for Diagnosing Human Factors in the Outage of a Nuclear Plant.” HCI International 2016 Conference, Toronto, Canada, 17 - 22 July 2016
13. “Video-based Crane-Related Workflow Control Framework for Nuclear Power Plant Outages.” International Symposium on Automation and Robotics in Construction (ISARC 2016), Auburn, Alabama, USA, July 18 – 21, 2016.
14. “Automatic Logical Inconsistency Detection in the National Bridge Inventory.” International Conference on Sustainable Design, Engineering and Construction, Tempe, AZ, USA, 18 – 20 May 2016.
15. “A Structural Model Simplification and Imagery Reduction Framework for Real-time Scour Length Monitoring of Bridges.” International Conference on Sustainable Design, Engineering and Construction, Tempe, AZ, USA, 18 – 20 May 2016.

16. "Visual Complexity Analysis of Sparse Imageries for Automatic Laser Scan Planning in Dynamic Environments." 2015 ASCE Workshop of Computing in Civil Engineering, June 21-23, 2015, Austin, TX, USA.
17. "Automated Tolerance Analysis of Curvilinear Components Using 3D Point Clouds for Adaptive Construction Quality Control." 2015 ASCE Workshop of Computing in Civil Engineering, June 21-23, 2015, Austin, TX, USA.
18. "A Divide-and-Conquer Algorithm for 3D Imaging Planning in Dynamic Construction Environments." 5th International/11th Construction Specialty Conference, Vancouver, British Columbia, 8 -10 June, 2015.
19. "Condition Diagnostics of Steel Water Tanks Using Correlated Visual Patterns." 5th International/11th Construction Specialty Conference, Vancouver, British Columbia, 8 -10 June, 2015.
20. "Adaptive 3D Imaging and Tolerance Analysis of Prefabricated Components for Accelerated Construction." International Conference on Sustainable Design, Engineering and Construction, Chicago, IL, USA, 10 – 13 May 2015.
21. "Increasing Productivity through Integrated Dimensional Change Detection and Control." FIATECH Technology Conference & Showcase, Boca Raton Resort, Florida, April, 2015.
22. "A Novel Project Controls Approach to Accurately Estimate, Monitor, and Stabilize Work Flow." The International Conference on Computing in Civil and Building Engineering - 2014, Orlando, Florida, USA, June 23 – 25, 2014.
23. "Time-Quality Analysis of Spatial Data Processing for Bridge Management." The International Conference on Computing in Civil and Building Engineering - 2014, Orlando, Florida, USA, June 23 – 25, 2014.
24. "Detailed Geometric Assessment of Steel Tanks based on Dense 3D Laser Scanning Point Clouds." 87th Annual AZ Water Conference, Phoenix, AZ, May 9, 2014
25. "Data Quality Oriented 3D Laser Scan Planning." 2014 Construction Research Congress Construction Research Congress 2014 - Construction in a Global Network, Atlanta, GA, May 19, 2014, DOI: 10.1061/9780784413517.101
26. "Analyzing Abnormal Cycles of Pilot Tube Microtunneling through Pattern Recognition in Time-Series Data of Hydraulic Pressure." Proceedings of the 2014 Construction Research Congress Construction Research Congress 2014 - Construction in a Global Network, D. Castro and Javier Irizarry, eds., ASCE, Atlanta, GA, Pages 994-1003, May 19, 2014.
27. "Automated Productivity Analysis of Pilot Tube Microtunneling Installations through Workflow Recognition in Time-Series Data of Hydraulic Pressure." The 4th International Conference on Pipelines and Trenchless Technology for Construction (ICPTT 2013), Xi'an, China, October 2013.
28. "Automated Spatial Change Analysis of Building Systems Using 3D Imagery Data." CIB W78 2013: 30th International Conference on Applications of IT in the AEC Industry. Beijing, China, October 2013.
29. "As-Built Error Modeling for Effective 3D Laser Scanning on Construction Sites." 2013 ASCE Workshop of Computing in Civil Engineering, Los Angeles, CA, USA, June 2013.

30. "Progressive Registration of LiDAR Data and Building Information Models for Construction Management." International LiDAR Mapping Forum, Denver, Colorado, United States, February, 2013.
31. "Statistical Identification of Items Important for Evaluating Bridge Conditions", TRB Lectern Session: Bridge Performance Measures (event number 620), January 15, 2013, Washington, D.C.
32. "Hierarchical Sampling for Efficient and Comprehensive Community Connectivity Analysis: A Michigan Case", 2012 ASCE Workshop of Computing in Civil Engineering, June 17-20, 2012, Clearwater Beach, FL, USA.
33. "Automating and Optimizing Spatial Data Processing Workflows for Civil Infrastructure Inspection", Construction Research Congress 2012, ASCE, May 21 - 23, 2012, West Lafayette, IN.
34. "Sensor Modeling of Laser Scanners for Automated Scan Planning on Construction Jobsites", Construction Research Congress 2012, ASCE, May 21 - 23, 2012, West Lafayette, IN.
35. "Efficient Quality Assessment of As-Is Building Information Models and 3D Laser-Scanned Data", 2011 ASCE Workshop of Computing in Civil Engineering, June 19 – 22, 2011, Miami, FL, USA.
36. "Formalization of Workflows for Extracting Bridge Surveying Goals from Laser-Scanned Data", FIATECH Technology Conference & Showcase, Chandler, Arizona, April, 2011.
37. "Extracting Surveying Goals from Point Clouds to Support Construction and Infrastructure Inspection." ASCE Construction Research Congress 2009, Seattle, April 2009.
38. "Characterization of Three Algorithms for Detecting Surface Flatness Defects from Dense Point Clouds." Society for Imaging Science and Technology (IS&T) and SPIE Electronic Imaging Science and Technology, San Jose, California, January, 2009.
39. "Automated Measurement Extraction from Laser Scanned Point Clouds to Support Bridge Inspection." IABSE Symposium 2008, Helsinki, Finland. June 2008.
40. "Laser Scanning for Bridge Inspection and Management." IABSE Symposium 2007, Weimar, Germany. September 2007.
41. "A Comparative Analysis of Depth Discontinuity and Mixed Pixel Detection Algorithms." 3DIM 2007, Montréal, Québec, Canada, August 2007.
42. "Component Oriented Framework for Distributed System with Application to Bridge Engineering." the 2nd CIB Student Chapter's International Symposium, Beijing, China, P.R., October 2004.

Invited Talks on Local Professional Meetings:

1. "Automation in Imaging for Construction and Infrastructure Management." DPR Laser Scanning Summit 2016, December 7th, 2016 (Invited)
2. "Increasing Productivity through Integrated Dimensional Change Detection and Control." Technical Lecture for Research Engineers of InEight Inc., Scottsdale, AZ, September 29th, 2016 (Invited)

3. "Increasing Productivity through Integrated Dimensional Change Detection and Control." A Research Presentation on the FIATECH Executive Board Meeting, Tempe, AZ, U.S.A., January 27th, 2016 (Invited)
4. "Imagery Data Collection and Analytics for Collaborative Construction Project Management." Texas A&M University, College Station, Two Online Guest Lectures for COSC 642 Construction Information Technology, October 7th and 9th, 2015 (Invited)
5. "Sensing and Modeling Technology for Construction Project Control." Del E. Webb School of Construction, Arizona State University, A Guest Lecture for EVIT (East Valley Institute of Technology) Visiting Students, April 24th, 2015 (Invited)
6. "3D Laser Scanning for Bridge Inspection and Structural Analysis." Maricopa County DOT, Arizona, A Guest Lecture for Introducing 3D Imaging Systems to Bridge Engineers, April 6th, 2015 (Invited)
7. "3D Laser Scanning for Bridge Inspection and Structural Analysis." Street Transportation Department, City of Phoenix, A Guest Lecture for Introducing 3D Imaging Systems to Bridge Engineers, March 20th, 2015 (Invited)
8. "SWARM: Computational Models for Spatial Data-Driven Civil Infrastructure and Built Environment Informatics." Guest Lecture for the School of Civil and Environmental Engineering at Georgia Institute of Technology, Atlanta, USA, March 9th, 2015 (Invited).
9. "Imagery Data Collection and Analytics for Collaborative Construction Project Management." University of Maryland, College Park, An Online Guest Lecture for ENCE 626 Web-based Project Management, November 9, 2014 (Invited)
10. "3D Imaging and Spatial Information Workflows for A/E/C Domain Applications." Guest Lecture for Engineers from HDR Inc. and City of Phoenix Steel Tank Program, June 18th, 2013 (Invited)
11. "Automated Spatial Data Analysis and Information Modeling for Construction and Infrastructure Management." Adaptive Intelligent Materials & Systems Center Open House, Ira A. Fulton Schools of Engineering, Arizona State University, May 18th, 2013 (Invited)
12. "3D Imaging and Construction Robotics: Workflows, Challenges, and the Future." Del E. Webb School of Construction, Arizona State University, Guest Lecture for CON 575 Construction Automation, July 28th, 2013 (Invited)
13. "3D Imaging and Spatial Information Workflows for A/E/C Domain Applications." University of Michigan, Ann Arbor, Online Guest Lecture for CEE 930 - Advanced Topics in Computer Integrated Construction, March 20, 2013 (Invited).
14. "3D Imaging and Spatial Information Workflows for A/E/C Domain Applications." Annual Meeting of Overseas Chinese Civil and Structural Engineering Association, Chapter of Arizona State University, March 23th, 2013 (Invited).
15. "Modeling and Sensing Technology for Construction Project Control." Del E. Webb School of Construction, Arizona State University, Guest Lecture for CON 575 Information Technology in Construction, February 21st, 2013 (Invited).
16. "SWARM: A Computational Framework for Active Spatial Sensing and Built Environment Informatics", Guest Lecture for the School of Sustainable Engineering and the Built Environment, Arizona State University, Tempe, AZ, January, 2012 (Invited).

17. "Extraction of Surveying Goals from Point Clouds Obtained from Laser Scanners to Support Bridge Inspection", Guest Lecture for the Civil and Construction Engineering Department, Western Michigan University, Kalamazoo, Michigan, February, 2010 (Invited).
18. "Surveying Goal Extraction from 3D Imaging Data to Support Infrastructure/Facility Inspection and Management." Guest Lecture for the Mapping and GIS Lab at The Ohio State University, Columbus, Ohio, June, 2009 (Invited).
19. "Surveying Goal Extraction from 3D Imaging Data to Support Infrastructure/Facility Inspection and Management." Guest Lecture for the College of Technology at Purdue University, West Lafayette, March, 2009 (Invited).
20. "Laser Scanning Based Geometric Defect Detection of Bombardier Track System." Lecture Series of the Center for Sensed Critical Infrastructure Research, Carnegie Mellon University, February 2007 (Invited).

RESEARCH SUPPORT**Summary of Research Support**

Total Approved/Anticipated External Funding (including supplements): **\$ 12,505,204.8**

- This data reflects all of the funding promised to the faculty member on every proposal they are on – as PI and co-PI. This is total funds awarded including pending awards. This provides a baseline as to the faculty member's level of activity.

Total Approved/Anticipated External Funding as PI: **\$ 1,554,526.80**

- This data reflects all of the funding promised to the faculty member on every proposal they are on – as PI. This is total funds awarded including pending awards. This provides a baseline as to their leadership.

Prof. Tang Funding Recognition (funding recognition as PI and co-PI; including pending awards): **\$3,301,349.86 (approved recognition: \$ 2,245,411.60)**

- This data provides a baseline as to their impact as indicated by recognition.

Award Amount Received at ASU (as of 02/10/2017; Prof. Tang recognition): **\$1,635,361.30**

- This data reflects their funding recognition and should match ASU systems

Total Research Expenditures (as of 02/10/2017; Prof. Tang recognition): **\$496,844.80**

- This data should match ASU systems

Sponsored Research Awards/Projects:

Sponsor	Title	Number	Funding Amount	Pingbo Tang's Recognition	PI	Co-PIs	Research Period
FEDERAL - Transportation Research Board (TRB), Airport Cooperative Research Program (hereinafter ACRP) Graduate Research Awards Program	Using Automatic Speech Recognition and Linguistic Analysis for Real-time Communication Error Detection and Proactive Air Traffic Control		\$12,000	\$12,000	Tang	Sun (PhD Student under Tang's Supervision)	September 2018 to August 2019
INDUSTRY - The Joint Research Program (JRP), Salt River Project (SRP)	Integrating Remote Sensing and Spatiotemporal Modeling for Predictive Operation and Maintenance of Canals and Water Facilities		\$ 63,179	\$ 63,179	Tang		August 2018 to July 2019
FEDERAL- NASA Aeronautics' University Leadership Initiative (ULI)	Information fusion for real-time national air transportation system prognostics under uncertainty		\$ 9,999,998	\$ 999,999.8	Yongming Liu (SEMTE, ASU)	Chattopadhyay, Cooke, Ying, He, Tang, Niemczyk	May, 2017 to April 2022
INDUSTRY - The Joint Research Program (JRP), Salt River Project (SRP)	Automated Remote Sensing Techniques for Predictive Operation and Maintenance Planning of Canals and Water Facilities		\$ 65,249	\$ 65,249	Tang		August, 2017 to September, 2018

INDUSTRY - The Joint Research Program (JRP), Salt River Project (SRP)	Automated Imagery Data Collection and Analysis for Efficient and Effective Underwater Inspection of Canals		\$ 63,572	\$ 63,572	Tang		September, 2016 to August, 2017
FEDERAL- Department of Energy, NEUP	Automatic Imagery Data Analysis for Proactive Computer-Based Workflow Management during Nuclear Power Plant Outages	DE-NE0008403	\$ 799,738	\$ 479,843	Tang	Cooke, Chasey, Yilmaz (OSU), Boring (INL)	October, 2015 to September, 2018
FEDERAL - National Science Foundation	CAREER: Risk Monitoring of Civil Infrastructures Using Correlated Change Patterns in Spatiotemporal Data	1454654	\$ 500,000	\$ 500,000	Tang		June, 2015 to May, 2020
FEDERAL - Carnegie Mellon University (Sub-award from a NSF DIBBS grant)	CIF21 DIBBS: An Infrastructure Supporting Collaborative Data Analytics Workflow Design and Management	1443069	\$ 999,900	\$ 60,000	Zhang (Carnegie Mellon)	Tang, Lu (Wayne State U)	January, 2015 to December, 2016
INDUSTRY - HDR Engineering Inc.	City of Phoenix Steel Tank Program: a 3D Imaging Pilot Study of Horse Tank Project		\$ 2,000	\$ 2,000	Tang		November, 2013 to June, 2014
Total			\$ 12,505,204.8	\$ 2,245,411.60			

External Awards and Gifts:

Sponsor	Title	Number	Funding Amount	Tang's Recognition	PI	Co-PIs	Research Period
Natural Science Foundation of China (NSFC)	Social cognitive study for comprehending non-formal safety leadership mechanisms in construction	71801007	CNY ¥190,000	International Travel ^a	Chun-Lin Wu (Beihang University, China)	Tang	January 2019 to December 2022
Natural Science Foundation of China (NSFC)	A study of cognitive-based dynamic hazard warning mechanism in construction	51878382	CNY ¥600,000	International Travel ^a	Pin-Chao Liao (Tsinghua University, China)	Tang	January 2019 to December 2022
Natural Science Foundation of China (NSFC)	Modeling Correlations between Unsafe Behaviors of Workers and Construction Environments through Sensing and Spatial Analysis	51578317	CNY ¥620,000	International Travel ^a	Pin-Chao Liao (Tsinghua University, China)	Tang	September 2015 to December 2019
General Research Fund, Hong Kong	Proactively Monitoring Construction Progress by Integrating 3D Laser-Scanning and BIM	15209314	HK\$692,894	International Travel ^a	Heng Li (The Hong Kong Polytechnic University)	Tang	September 2014 to September 2016
DPR Research Foundation	Automatic Mobile Device Geo-Referencing for Supporting Real-Time Inspections on Construction Sites		\$ 10,000	\$ 10,000	Tang		April, 2013 to May, 2014

IDENTEC Solutions	Automatic Mobile Device Geo-Referencing for Supporting Real-Time Inspections on Construction Sites		\$ 39,220	\$ 20,000	Tang	Grau	April, 2013 to May, 2014
Total			\$ 49,220	\$ 30,000			

^a. These are international collaboration projects that have no \$ recognized while involving me as an International Co-PI and supporting my international travels for research collaboration.

Internal Funding:

Sponsor	Title	Number	Funding Amount	Pingbo Tang's Recognition	PI	Co-PIs	Research Period
Western Michigan University, Research Development Award	Automated Sensor Planning and Data Quality Validation for Efficient and Effective Geometric Assessments of Building Facilities Using 3D Laser Scanners		\$ 2,500	\$2,500	Tang		June 2011 to July 2012
Total			\$2,500	\$ 2,500			

PERSONNEL: STUDENT SUPERVISION / MENTORING, TEACHING, DISSERTATION COMMITTEES, RESEARCHERS, AND OUTREACH

Summary of Mentoring

- Mentored Personnel in US Academia (Tenure-track Positions): 0
- Postdoctoral Researchers: 1 (0 current, 1 previous)
- Ph.D. Students Graduated: 7 (chair for 2, committee for 5)
- Ph.D. Students Current: 4 (chair for 4, committee for 0)
- M.S. Students Graduated: 15 (chair for 14, committee for 1)
- M.S. Students Current: 1 (chair for 1)
- Undergraduate Students (research): 2
- High-School Students (research): 5
- Middle-School Students: 0
- Student Fellowships and Awards: 1

Summary of Teaching

- Undergraduate Courses Taught, including New Course Development: 14
- Graduate Courses Taught, including New Course Development: 2 new courses
- Average Teaching Evaluation Score for Undergraduate Courses taught at ASU: 4.5
- Average Teaching Evaluation Score for Graduate Courses taught at ASU: 4.72

Courses Taught:

One undergraduate course since joining ASU, one new graduate course started in Spring 2015.
(Description of Unit Rating Scale: 1 – 5 where 5 is best)

Course Prefix, Number, Title (No. of Credit Hours)	Term/Year	No. of Students	Student Eval	Mean for Comparison*
CON 251 Microcomputer Applications for Construction (3)	SP 2018	38	4.59	-
CON 598 International Project Management through Technology Innovations (3)	SP 2018	12	4.37	-
CON 251 Microcomputer Applications for Construction (3)	FA 2017	37	4.21	-
CON 598 International Project Management through Technology Innovations (3)	SP 2017	8	4.64	-
CON 251 Microcomputer Applications for Construction (3)	FA 2016	37	4.43	-
CON 251 Microcomputer Applications for Construction (3)	SP 2016	33	4.42	-
CON 598 Sensing and Modeling Methods for Construction Engineering and Management (3)	SP 2016	6	4.83	-
CON 251 Microcomputer Applications for Construction (3)	FA 2015	39	4.78	-

CON 251 Microcomputer Applications for Construction (3)	SP 2015	30	4.64	-
CON 598 Sensing and Modeling Methods for Construction Engineering and Management (3)	SP 2015	8	4.6	-
CON 251 Microcomputer Applications for Construction (3)	FA 2014	33	4.14	-
CON 251 Microcomputer Applications for Construction (3)	FA 2014	31	4.52	-
CON 251 Microcomputer Applications for Construction (3)	SP 2014	23	4.50	4.36
CON 251 Microcomputer Applications for Construction (3)	FA 2013	24	4.44	4.31
CON 251 Microcomputer Applications for Construction (3)	FA 2013	21	4.75	4.31
CON 251 Microcomputer Applications for Construction (3)	SP 2013	23	4.70	4.27
CON 251 Microcomputer Applications for Construction (3)	FA 2012	22	4.57	4.30
CON 251 Microcomputer Applications for Construction (3)	FA 2012	17	4.11	4.30
CCE 5310 Advanced Construction Project Management (3)	SU 2012	- ^a	- ^a	- ^a
CCE 6960 Sensing and Modeling for Construction Management (3)	SP 2012	- ^a	- ^a	- ^a
CCE 4380 Construction Project Management (3)	SP 2012	- ^a	- ^a	- ^a
CCE 6350 Project Cost Estimating (3)	FA 2011	- ^a	- ^a	- ^a
CCE 4310 Construction Planning and Scheduling (3)	FA 2011	- ^a	- ^a	- ^a
CCE 6360 Life Cycle Cost Management and Analysis (3)	SU 2011	16	4.56	- ^a
CCE 6100 Civil Systems Analysis (3)	SP 2011	18	4.88	- ^a
CCE 7000 Master's Thesis (3)	SP 2011	4	5.0	- ^a
CCE 4360 Construction Estimating/Bidding/Cost Control (3)	FA 2010	20	3.17	- ^a
CCE 4310 Construction Planning and Scheduling (3)	FA 2010	31	3.67	- ^a

*“Mean for Comparison” is the mean of the evaluations of all courses across the unit

^a I taught these courses at Western Michigan University and some of the data were missing.

New Courses Developed:

Course Prefix, Number, Title (No. of Credit Hours)	Term/Year	Course Description
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CON 598 International Project Management through Technology Innovations	SP 2018 SP 2017	The purpose of this course is to provide the students with a comprehensive understanding about the challenges of international project management, sustainable development, and roles of technological innovations in a context of globalization and sustainable development of urban systems.
CON 598 Sensing and Modeling Methods for Construction Engineering and Management	SP 2016 SP 2015	This course expose students to various sensing and modeling technologies that can help project managers to achieve efficient and effective construction project planning, job site monitoring, and integrated cost-time-safety-quality management.
CCE 6960 Sensing and Modeling for Construction Management	SP 2012	This graduate class introduces various sensor technologies and mathematical models useful in monitoring construction site and managing projects.

Student Advising:

In Progress:

1. Yanyu Wang, PhD (Construction Management), Chair, Spatiotemporal Data Analytics for Automated Diagnosis of Aviation Systems, December 2021 (Started August 2018)
2. Rui Li, PhD (Construction Engineering), Chair, Spatiotemporal Data Analytics for Automated Diagnosis of Connected Communities and Infrastructure Systems, May 2021 (Started December 2017)
3. Zhe Sun, PhD (Construction Engineering), Chair, Data-Driven Human Factor and Maintenance Workflow Analytics in Civil Infrastructure Shutdowns, May 2020 (Started January 2017)
4. Jiawei Chen, PhD (Construction Engineering), Chair, Computer Vision Technologies for Civil Infrastructure Systems, December 2019 (Started August 2016)
5. Omar K. Algonaiyan, MS (Construction Engineering), Chair, Construction Schedule Diagnosis for Oil and Gas Plants, May 2019 (Started August 2017)

Graduated:

1. Rahimi Bin Abdul Rahman, PhD (Construction Management), Committee, Building Information Modeling Issues and Skills: Prioritizing and Incorporating them into Construction Education, July 2018.
2. Siddhant Datta, PhD (Mechanical Engineering), Committee, Characterization of Fatigue Damage in Aerospace Materials under Complex Multi-axial Loading, July 2018.
3. Seungtaek Lee, PhD (Construction Engineering), Committee, Dynamic Programming for Adaptive Data-Driven Monitoring of Construction Workflows, July 2017, Current Position: Postdoctoral Research Associate in the SWARM lab directed by Dr. Pingbo Tang (me)
4. Cheng Zhang, PhD (Construction Engineering), Chair, Human-Centered Automation for Resilience in Acquiring Construction Field Information, July 2017, Current Position: Postdoctoral Research Associate in the Department of Civil and Environmental Engineering at Texas A&M University
5. Vamsi Sai Kalasapudi, PhD (Construction Engineering), Chair, Sensory Data-Driven Change Management of Construction and Infrastructure Projects, May 2017, Current Position: Visiting Lecturer in Moss School of Construction, Infrastructure, and Sustainability, College of Engineering and Computing, Florida International University

6. Suleiman Alsafouri, PhD (Construction Engineering), Committee, Emerging Information and Communications Technology and the Human Factors to Enhance Design and Constructability Review Processes in Construction, May 2017
7. Tishun Peng, PhD (Mechanical Engineering), Committee, Probabilistic fatigue damage diagnostics and prognostics for metallic and composite materials, 05/01/2015
8. Paul M. Maranian, MS (Construction Engineering), Chair, Structural Health Monitoring for Civil Infrastructure, 07/10/2018.
9. Zia Ud Din, MS (Construction Engineering), Chair, Managing Data Processing Histories for Proactive Monitoring of Civil Infrastructure Systems, 08/01/2015
10. Matthew P. Olson, MS (Construction Engineering), Committee, Pilot Tube Microtunneling: Instrumentation and Monitoring for Jacking Force and Productivity Analysis, 05/01/2013
11. Omar Kannan, MS (Construction Engineering), Chair, Regression-Based Prioritization and Data Modeling for Customized Civil Engineering Data Collection, 06/01/2012
12. Wael Alruqi, MS (Construction Engineering), Chair, Solar Modeling and Cost-Benefit Analysis of Energy Efficiency Window Arrangements, 06/01/2011
13. Fahd S Alaswad, MS (Construction Engineering), Chair, Sensor Modeling and Cost Benefit of Using Laser Scanning Technology in AEC, 08/01/2011
14. Saad Aoun Alqahtani, MS (Construction Engineering), Chair, Statistical and Visualization Approach for Ranking Factors Affecting NBI Bridge Rating, 06/01/2011
15. Salahdeen El Kadeki, MS (Construction Engineering), Chair, A Comparative Analysis of the Sense of Construction Delays of Experienced and Inexperienced Engineers, 06/01/2011
16. Daygrot Mancebo, MSE (Construction Engineering), Chair, Optimization of Sensor Model of Laser Scanners, 06/01/2012
17. Juan Ramon Tavares Vilorio, MSE (Construction Engineering), Chair, Energy Performance Analysis of Campus Building and Green Design, 06/01/2012
18. Mohanad Majid Flayyih, MSE (Construction Engineering), Chair, Hierarchical Sampling for Efficient and Comprehensive Community Connectivity Analysis, 12/01/2011
19. Guray Gunal, MSE (Construction Engineering), Chair, Sensing and Modeling for Construction Management, 12/01/2011
20. Alan Luis Alvarez, MSE (Construction Engineering), Chair, WiFi RSS Localization: Adapting Radio Maps to Handle Noises in Environments, 12/01/2011
21. Faisal Adel Alsayar, MSE (Construction Engineering), Chair, Construction Schedule Optimization, 06/01/2011
22. Wadea K Sindi, MSE (Construction Engineering), Chair, Quality Assessments and Quality Control QA/QC Process of 3D Data and Building Information Models, 06/01/2011

Financial Support for Graduate Students:

1. Yanyu Wang, Expected Graduation Date: Dec. 2021, Field of Study: Construction Engineering and Management, RA (NASA ULI Grant)
2. Rui Li, Expected Graduation Date: May 2021, Field of Study: Construction Engineering and Management, RA (NSF CAREER Grant)
3. Zhe Sun, Expected Graduation Date: May. 2020, Field of Study: Construction Engineering and Management, RA (DOE NEUP Award + NSF DIBBS Grant + NSF CAREER Grant)

4. Jiawei Chen, Expected Graduation Date: Dec. 2019, Field of Study: Construction Engineering and Management, RA (SRP Grant)
5. Weiyu Ji, Expected Graduation Date: May. 2017, Field of Study: Construction Engineering and Management, RA (DOE NEUP Award, 10 hour/week RA support)
6. Vamsi Sai Kalasapudi, Graduation Date: May 2017, Field of Study: Construction Engineering and Management, RA (Startup Fund + NSF CAREER Grant) + TA
7. Cheng Zhang, Graduation Date: July 2017, Field of Study: Construction Engineering and Management, RA (Startup Fund + DOE NEUP Award) + TA
8. Verica Buchanan, Expected Graduation Date: Dec. 2019, Field of Study: Human Systems Engineering, RA (DOE NEUP Award)
9. Pengfei Zhang, Graduation Date: Dec. 2016, Field of Study: Construction Engineering and Management, Hourly Student Worker (DOE NEUP Award, 20 hour/week hourly support)

Financial Support for Postdoctoral Research Associates:

1. Cheng Zhang, Field of Research: Construction Engineering and Management (DOE NEUP Award), September 2017 – January 2018.

Teaching Awards:

1. Cache Valley Electric Lecturer #5 Award, School of Sustainable Engineering and The Built Environment, Arizona State University, Tempe, AZ, July 2018, July 2017, July 2016
2. ASCE ExCEED Fellow, American Society of Civil Engineers, West Point, New York, USA, July 27, 2012
3. Outstanding Service to Students (Selected by Construction Engineering Undergraduate Student, Andrew W. Dobbs), College of Engineering and Applied Sciences, Western Michigan University, Kalamazoo, Michigan, USA, April 2012

PROFESSIONAL ACTIVITIES AND SERVICE

Summary of Professional Activities and Service

- Editor, Associate Editor for 2 peer-reviewed journals
- 3 International/national conferences chaired
- 18 International/national conferences committees
- 3 International/national conferences sessions organized
- 10 International/national conference sessions chaired
- Member of Editorial Board 2
- Peer Reviewer for 26 Journals
- Proposal Review Service for 4 Agencies
- 0 ASU-level Committees, 1 Engineering School-level Committees and 5 Unit-level Committees.
- Chair of 0 Faculty Search Committees

Editor or Associate Editor of Journal:

1. Editorial Board Member, Journal of Innovative Infrastructure Solutions (Springer), June 2015 – present
2. Associate Editor, Journal of Computing in Civil Engineering (ASCE: American Society of Civil Engineers), August 2011 – present

Journal Paper Reviews:

1. ACM Computing Surveys (CSUR), 2017 – present
2. International Journal of Intelligent Robotics and Applications (Springer), 2017 – present
3. PLOS One, 2017 – present
4. Elsevier Computer Vision and Image Understanding, 2016 – present
5. ASCE Journal of Management in Engineering, 2015 – present
6. Elsevier Resources, Conservation & Recycling, 2015 – present
7. Elsevier Environmental Impact Assessment Review, 2015 – present
8. Elsevier Energy Policy, 2015 – present
9. Elsevier Renewable & Sustainable Energy Reviews, 2015 – present
10. Springer Mathematical Geosciences, 2015 – present
11. ASCE Journal of Bridge Engineering, 2015 – present
12. Elsevier Journal of Building Engineering, 2014 – present
13. Springer Journal of Visualization in Engineering, 2013 – present
14. Elsevier Journal of Building and Environment, 2013 – present
15. ASCE Practice Periodical on Structural Design and Construction, 2013 – present
16. Elsevier Advances in Engineering Software, 2013 – present
17. Elsevier Journal of Advanced Engineering Informatics, 2012 – present
18. MDPI Sensors, 2012 – present
19. Techno Steel and Composite Structures, 2012 – present
20. Elsevier Journal of Cultural Heritage, 2012 – present
21. SPIE Journal of Applied Remote Sensing, 2010 – present
22. SPIE Journal of Electronic Imaging, 2010 – present
23. SPIE Journal of Optical Engineering, 2010 – present
24. ASCE Journal of Computing in Civil Engineering, 2009 – present
25. ASCE Journal of Construction Engineering and Management, 2009 – present
26. Elsevier Journal of Automation in Construction, 2009 – present
27. ASCE Journal of Transportation Engineering, 2007 – present

Chair of University or College Committee:

None

Member of University or College Committee:

1. Member, Dean's Faculty Advisory Council (DFAC), Ira A. Fulton Schools of Engineering, Arizona State University, September 2018 – December 2018
2. Member, Medical Engineering Group of the College of Engineering and Applied Science (CEAS), Western Michigan University (Served as the representative of the Civil and Construction Engineering Department for developing a multidisciplinary Medical

Engineering program based on resources available in CEAS and the newly established Medical School of Western Michigan University), March 2011 – June 2012

Member or Chair of Department Committee:

1. Member, Laboratory Committee of the School of Sustainable Engineering and the Built Environment, Arizona State University, September 2017 – August 2019
2. Member, Scholarship Committee of Del E. Webb School of Construction, Arizona State University, September 2015 – August 2019
3. Member, Assessment Committee of Del E. Webb School of Construction, Arizona State University, August 2014 – present
4. Member, Academic Affairs Committee of Del E. Webb School of Construction, Arizona State University, September 2013 – August 2015
5. Member, Construction Faculty Search Committee of Del E. Webb School of Construction, Arizona State University, September 2012 – February 2014
6. Member, Scholarship Committee of Del E. Webb School of Construction, Arizona State University, September 2012 – August 2014
7. Chair, Construction Faculty Search Committee, Western Michigan University, February 2011 – September 2011
8. Member, Transportation Faculty Search Committee of the Civil and Construction Engineering Department, Western Michigan University, January 2011 – April 2011

Organizer of National or International Meetings:

Leadership Positions of Conferences and Meetings:

1. Chair of the Scientific Committee, Construction Research Congress 2020, Tempe, Arizona, March 8 – 10, 2020
2. Chair of the Infrastructure Management Track, Technical Committee, Construction Research Congress 2018, New Orleans, Louisiana, April 2 – 4, 2018
3. Conference Vice Chair, The 2017 ASCE International Workshop on Computing in Civil Engineering, Seattle, WA, USA, Seattle, WA, USA, 25 – 27 June, 2017
4. Section Vice Chair, World Transport Convention (WTC) 2017, Section “Construction Engineering & Project Management Section”, Beijing, China, June 4-6, 2017
5. Organizing Committee, International Conference on Maintenance and Rehabilitation of Constructed Infrastructure Facilities: July 19 – 21, 2017 South Korea
6. Conference Chair - Big Data/Intelligence, International Conference on Sustainable Design, Engineering and Construction - ICSDEC 2016, Technical Program and Leadership Committee, Tempe, AZ, USA, 18 – 20 May, 2016
7. Leadership Committee, International Conference on Sustainable Design, Engineering and Construction - ICSDEC 2015, Technical Program and Leadership Committee, Chicago, USA, 10 – 13 May 2015
8. Organizing Committee, The North America-East Asia Workshop on Big Data Analytics for Infrastructure and Building Sustainability and Resilience (IBSR) Research, Beijing, China, P.R. 19 – 20 Sept. 2014

Conference Session Chair:

1. The 35th CIB W78 2018 Conference, Chicago, Illinois, USA (Session “Cyber Human Systems”), 10/02/2018
2. Construction Research Congress 2018, New Orleans, Louisiana, USA (Session “Infrastructure Management”), 04/02/2018
3. The 2017 ASCE International Workshop on Computing in Civil Engineering, Austin, Texas, USA (Session “Data Sensing and Analysis”), 06/23/2017
4. HCI International 2016 Conference, Toronto, Canada (Session “Digital Human Modeling: Applications in Health, Safety, Ergonomics and Risk Management”), 07/22/2016
5. The 2015 ASCE International Workshop on Computing in Civil Engineering, Austin, Texas, USA (Session 1.5 “Civil & Structural Design and Analysis IV”), 06/23/2015
6. The International Conference for Computing in Civil and Building Engineering 2014 (ICCCBE 2014) (Joint Conference with CIB W78 2014, Session “Civil & Structural Design and Analysis IV”), 06/24/2014
7. 2014 Construction Research Congress (Session “Automation and Data Sensing”), 05/20/2014
8. Winter Simulation Conference 2013 (Session “Construction Process Simulation”), 12/10/2013
9. 2013 ASCE International Workshop on Computing in Civil Engineering, Los Angeles, CA (Session “Parallel Session 12 – Visualization and Simulation II”), 06/25/2013
10. The 30th International Symposium on Automation and Robotics in Construction (ISARC 2013), Montréal, Canada, (Session “3D Imaging for Infrastructure and Facilities Management”), August 11 – 15, 2013
11. 2011 ASCE International Workshop on Computing in Civil Engineering, Miami, FL (Session “Sustainable and Resilient Infrastructure – II”), June 19 – 22, 2011

Scientific/Technical Committee of Academic Conferences:

1. Chair of the Infrastructure Management Track, Technical Committee, Construction Research Congress 2018, New Orleans, Louisiana, April 2 – 4, 2018
2. Technical Committee, 22nd International Conference on Advancement of Construction Management and Real Estate (2017 CRIOCM), November 20 – 23, 2017, Swinburne University of Technology, Hawthorn, Melbourne, Australia
3. Technical Committee, GeoMEast 2017 – “Sustainable Civil Infrastructures (SCI): Innovative Infrastructure Geotechnology”, Sharm El-Sheikh, Egypt, July 15 – 19, 2017
4. Technical Committee, Construction Research Congress 2016, Puerto Rico, May 31 – June 2, 2016
5. Scientific Committee, The International Conference for Computing in Civil and Building Engineering 2016 (ICCCBE 2016), Osaka, Japan, July 6 – 8, 2016
6. Scientific Committee, The 15th International Conference on Construction Applications of Virtual Reality (CONVR 2015), Banff, Alberta, Canada, October 5 – 7, 2015
7. DSA Best Paper Selection Committee Chair, ASCE Data Sensing and Analysis (DSA) Committee, Technical Committee of the DSA Best Paper Award (reviewed 20+ candidate papers submitted to 2015 ASCE International Workshop on Computing in Civil Engineering, Austin, Texas, and selected the best paper), June 21 – 23, 2015

8. Scientific Committee, The 2015 ASCE International Workshop on Computing in Civil Engineering, Austin, Texas, USA, June 21 – 23, 2015
9. DSA Best Paper Selection Committee Chair, ASCE Data Sensing and Analysis (DSA) Committee, Technical Committee of the DSA Best Paper Award (reviewed 20+ candidate papers submitted to 2014 ASCE International Workshop on Computing in Civil Engineering, Orlando, Florida, and selected the best paper), ICCCBCE 2014, Orlando, FL, USA, June 23 – 25, 2014
10. Scientific Committee, The International Conference for Computing in Civil and Building Engineering 2014 (ICCCBE 2014), Orlando, FL, USA, June 23 – 25, 2014
11. Technical Committee, Construction Research Congress 2014, Atlanta, GA, USA, May 19 – 21, 2014
12. Technical Committee, The 13th COTA International Conference of Transportation Professionals (CICTP 2013), Shenzhen, China, P.R., August 13 – 16, 2013
13. Scientific Committee, 2013 ASCE International Workshop on Computing in Civil Engineering, Los Angeles, CA, USA, June 23 – 25, 2013
14. Scientific Committee, The 12th International Conference on Construction Applications of Virtual Reality (CONVR 2012), Taipei, Taiwan, November 1 – 2, 2012
15. Technical Committee, The 2012 International Conference on Construction and Real Estate Management (2012 ICCREM), Kansas City, USA, October 1 – 2, 2012
16. Scientific Committee, CIB W78 2010, 27th International Conference – Application of IT in the AEC industry, Cairo, Egypt, November 16 – 19, 2010

Member of National or International Committee:

1. Chair, Data Sensing and Analysis (DSA) Committee, American Society of Civil Engineers (elected by ASCE DSA Committee members), November 1st, 2017 – present
2. Section Vice Chair, World Transport Convention (WTC) 2017, Section “Construction Engineering & Project Management Section”, September 2016 – present
3. Member, Construction Industry Institute (CII) Academic Committee, September 2011 – present
4. Member, TRB Young Member Council, August 2011 – present
5. Member, ASCE Data Sensing and Analysis (DSA) Committee, June 2011 – present
6. Member, ASCE Education Committee, June 2011 – present
7. Member, ASCE Visualization, Information Modeling, and Simulation (VIMS) Committee (Task Force of “ASCE Grand Challenges,” extensive industry surveys and literature review for understanding fundamental VIMS/DSA challenges, 2013 – 2015), June 2011 – present
8. Founding Member, TRB AFH10/ABJ50 Sub-Committee on Construction Information Systems, February 2011 – present
9. Member, ASTM International (Committee E57: 3D imaging systems), March 2009 – present
10. Young Member, Transportation Research Board (TRB), Committee on Bridge Management (AHD35), September 10, 2007 – present

Office of National or International Professional Committee:

1. Section Vice Chair, World Transport Convention (WTC) 2017, Section “Construction Engineering & Project Management Section”, September 2016 – present
2. Vice Chair, ASCE Data Sensing and Analysis (DSA) Committee (elected by DSA Committee members), June 2016 – present

Continuing Education Courses:

None

Fundraising:

None

External Program Reviews:

None

Project Panels and Proposal Reviews:

1. Proposal Reviewer, Department of Energy, May. 2015 – present.
2. Project Panel, National Cooperative Highway Research Program (NCHRP) Project Panel 14-29 “Assessing, Coding, and Marking of Highway Structures in Emergency Situations”: review proposals, select the project team, review project reports, attend panel meetings for project progress monitoring, October 2012 – February 2016
3. Proposal Review Panel, National Science Foundation, Civil Infrastructure Systems Program, May. 2015
4. Proposal Reviewer, The Maryland Technology Development Corporation (“TEDCO”), May. 2011

Professional Memberships:

1. Member, TRB (Transportation Research Board of the National Academies), September 10, 2007 – present
2. Associate Member, ASCE (American Society of Civil Engineers), March 2009 – present
3. Member, ASTM International (Committee E57: 3D imaging systems), March 2009 – present
4. Member, ASPRS (American Society for Photogrammetry and Remote Sensing), April 2010 – present
5. Member, IABSE (International Association for Bridge and Structural Engineering), September 2007 – present
6. Member, ACM (Association for Computing Machinery), August 2007 – present
7. Member, IEEE (Institute of Electrical and Electronics Engineers, Inc.), August 2007 – present