

Lingguang Song, Ph.D.

Associate Professor
Construction Management, College of Technology
University of Houston, Houston, TX. 77204.

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Vita

Dr. Lingguang Song is an Associate Professor and the Graduate Program Coordinator of Construction Management at the University of Houston. He is also a consultant for Fluor Corporation on estimating, scheduling and project control. He teaches construction management, contract, scheduling, estimating, reinforced concrete, and computer applications at the undergraduate and graduate levels. His primary research interests include project planning and control, estimating, process simulation and visualization, project delivery, labor productivity, lean construction, and IT applications in construction. He has been involved in research funded by various grants from Project Management Institute, Electri International, Department of Commerce, National Science and Engineering Research Council of Canada, Fluor Corporation, Baker Concrete Construction Inc., and several other construction firms. He has published one book and more than forty journal papers, conference articles, and technical reports on his research. He is the winner of the 2009 Best Peer Reviewed Paper Award of the *Journal of Management in Engineering* from the American Society of Civil Engineers (ASCE).

EDUCATION

Doctor of Philosophy

Major: Construction Engineering and Management (March 2004)
Department of Civil and Environmental Engineering, University of Alberta, Canada
Dissertation: Productivity modeling for steel fabrication projects

Master of Engineering

Major: Hydraulic Structure Engineering (July 1999)
School of Civil Engineering, Tianjin University, Tianjin, China
Thesis: System analysis on large-scale underground structural group construction

Bachelor of Engineering

Hydraulic and Hydroelectric Construction Engineering (July 1996)
School of Civil Engineering, Tianjin University, Tianjin, China
Engineering Economics (July 1996)
School of Management, Tianjin University, Tianjin, China

ACADEMIC POSITIONS HELD

| | |
|--|-----------------------|
| Associate Professor | 2010 - Present |
| Assistant Professor | 2004 - 2010 |
| Graduate Program Coordinator | 2006 - Present |
| Department of Construction Management College of Technology, University of Houston, Houston, TX. | |
| Research Associate | 2003 - 2004 |
| NSERC/Alberta Construction Industry Research Chair University of Alberta, Edmonton, Alberta, Canada | |

Instructor
Department of Civil and Environmental Engineering
University of Alberta, Edmonton, Alberta, Canada

2001 – 2002

INDUSTRIAL EXPERIENCE

Estimator/Consultant
Fluor, Sugar Land, TX.

2012 – Present

Construction Engineer/Faculty Intern
Baker Concrete Construction Inc., Houston, TX.

2006

Consultant
Waiward Steel Fabricators Inc., Edmonton, Alberta, Canada

2000 – 2004

Construction Engineer
The Fourth Construction Co., China Harbour Engineering Company Ltd., Tianjin, China

1997 – 1999

PUBLICATIONS

Book

1. **Song, L.** (2010). *Earned value management: A global and cross-industry perspective on current practice*. Project Management Institute. Newtown Square, PA. ISBN: 1935589067.

Refereed Journal Papers

2. **Song, L.**, Mohammed, T., Stayshich, D. and Eldin, N. (2015) A cost effective material tracking and locating solution for material laydown yard. *Procedia Engineering*, Elsevier, Accepted.
3. Cui, Y., Liang, D., and **Song, L.** (2013) "Evaluating the Impact of Transportation Network on Post-Hurricane Access to Healthcare Facilities." *J. Performance of Constructed Facilities*. Accepted.
4. **Song, L.** and Eldin, N. (2012) "Adaptive real-time tracking and simulation of heavy construction operations." *Automation in Construction*. Vol. 27. 2012. 32-39.
5. **Song, L.** Lee, S., and F. H. Rachmat (2012) Stochastic Look-ahead Scheduling Method for Linear Construction Projects. *Journal of Risk Analysis and Crisis Response*, Vol 4, 2012. 252-260.
6. Liu, D., Sun, J. Zhong, D., and **Song, L.** (2012) Compaction quality control of earth-rock dam construction using real-time field operation data. *J. of Const. Eng. and Manag.*, 138(9), 1085–1094.
7. Liang, D, Cong, L., Brown, T. and **Song, L.** (2012) "Comparison of Sampling Methods for Post-Hurricane Damage Survey." *Journal of Homeland Security and Emergency Management*, 164 (1), 29 – 40.
8. **Song, L.** and Liang, D. (2011) "Lean construction implementation and its implication on sustainability: a contractor's case study." *Canadian Journal of Civil Engineering*, 38(3), 350-359.
9. Liang, D., **Song, L.**, and Branham, T. (2010) "A task-based safety model for construction projects." *Management, Procurement and Law*, Dec. 2010.
10. **Song, L.**, Mohamed, Y., and AbouRizk, S. M. (2009) "Early contractor involvement in design and its impact on construction schedule performance." *J. of Manag. in Eng.*, ASCE, Vol. 25(1), 12-20. (2009 ASCE Best Peer Reviewed Paper Award of the *Journal of Management in Engineering*).
11. **Song, L.**, and AbouRizk, S. M. (2008) "Labor productivity modeling using historical data." *J. of Const. Eng. and Manag.*, ASCE, Vol. 20(5), 786-794.
12. Wang, X, Sun, Y., **Song, L.**, Mei, C. (2009) "An eco-environmental water demand based model for optimizing water resources using hybrid genetic simulated annealing algorithms. *Part I.*" *J. of Environ. Manag.*, Elsevier, Vol. 90(8), 2628-2635.

13. Wang, X, Sun, Y., **Song, L.**, Mei, C. (2009) "An eco-environmental water demand based model for optimizing water resources using hybrid genetic simulated annealing algorithms. *Part II.*" *J. of Environ. Manag.*, Elsevier, Vol. 90(8), 2612-2619.
14. Wang, X, Yang, L., Sun, Y., **Song, L.**, Zhang, M., and Cao, Y. (2008) "3-D simulation on the water flow field and suspended solids concentration in the rectangular sedimentation tank." *J. of Environ. Eng.*, Elsevier, Vol. 134(11), 902-911.
15. **Song, L.**, and AbouRizk, S. M. (2006) "Virtual shop model for experimental planning of steel fabrication projects." *J. of Compu. in Civil Eng.*, ASCE. Vol. 20(5), 308-316.
16. **Song, L.**, Wang, P., and AbouRizk, S. M. (2006) "Virtual shop modeling system for industrial fabrication projects." *J. of Simulation Theory and Practice*, EUROSIM, Vol. 14(2), 649-662.
17. Zhong, D., Li, M., **Song, L.**, and Wang, G. (2006) "Enhanced NURBS modeling and visualization for large 3D geoenvironmental applications: An example from the Jinping first-level hydropower engineering project, China." *Computers & Geosciences*. Science Direct, Vol. 32, 1270-1282.
18. **Song, L.**, AL-Battaineh, H., and AbouRizk, S. M. (2005) "Modeling uncertainty with an integrated construction simulation system." *Canadian J. of Civil Eng.*, CSCE, Vol. 32(3), 533-542.
19. **Song, L.**, and AbouRizk, S. M. (2004) "Quantifying engineering project scope for productivity modeling." *J. of Const. Eng. and Manag.*, ASCE, Vol. 131(3), 360-367.
20. Zhong, D., Li, J., Zhu, H., and **Song, L.** (2004) "GIS-based visual simulation methodology for concrete dam construction process." *J. of Const. Eng. and Manag.*, ASCE, Vol. 130(5), 742-750.
21. Zhong, D., and **Song, L.** (1999) "Visual resource-oriented construction simulation." *Journal of Tianjin University*, Vol. 6, 682-686.
22. Zhong, D., Huang, L., Mi, Z., and **Song, L.** (1998) "Predicting water intake volume during the flood season using neural networks." *Chinese J. of Manag. Sciences*, Vol. (3), 45-50.

Conference Papers

23. **Song, L.** Mohammed, T., Stayshich, D. and Eldin, N. (2015) Cost effective material tracking and locating solution for material laydown yard. Creative Construction Conference 2015, Krakow, Poland.
24. Poshtiban, M., **Song, L.**, and Eldin, N. (2015) Automatic Satellite-Based Ship Detection Method for Offshore Pipelines Monitoring and Protection. Proceedings of 2015 ASCE International Workshop on Computing in Civil Engineering, Austin, TX
25. Fallahi, A., **Song, L.**, and Eldin, N. (2015) Improving Construction Training through Virtual Simulation and Natural Gesture: A pilot study, 51st annual international conference, Associated School of Construction, College Station, TX.
26. Amador, J., **Song, L.**, and Eldin, N. (2015) Utilizing Discrete Event Simulation to Minimize Scope Creep in Construction Projects: A case study, 51st annual international conference, Associated School of Construction, College Station, TX.
27. Eaton, J., **Song, L.**, and Eldin, N. (2013) Safety perception and its effects on safety climate in industrial construction industry. *Proc. 30th Inter. Sym. on Automation and Robotics in Construction*. Montreal, QC, Canada. Accepted.
28. Caicedo, A., and **Song, L.** (2012) "Improving quality in residential projects using Key Characteristics: Lessons learned from the manufacturing industry", *Proceeding 2012 International Conference on Construction and Real Estate management*. Kansas City, Kansas.
29. Gore, S., **Song, L.** and Eldin, N. (2012) Photo-modeling for Construction Site Space Planning, *Proc. 2012 Construction Research Congress*. West Lafayette, IN.
30. Blackmon, T., Saxena, R., and **Song, L.** (2011) "A conceptual framework for total constraint management." *Proc. 28th Inter. Sym. on Automation and Robotics in Construction*, Seoul, Korea.
31. **Song, L.**, Eldin, N., and Tiwari, Y. (2011) "Real-time tracking and self-adaptive simulation of construction operations." *Proc. 2nd World Congress on Computer Science and Information Engineering*, Changchun, Jilin, China.
32. **Song, L.**, Lee, S., and Liu, J. (2009) "Incorporating virtual field information in learning construction operations." *Proc. 2009 ASEE Annual Conference*, Austin, TX.

33. **Song, L.**, Cooper, C., and Lee, S. (2009) "Real-time simulation for look-ahead scheduling of heavy construction projects." *Proc. 2009 Const. Research Congress*. ASCE, Seattle, WA.
34. Ghatala, M., Lee, S., and **Song, L.** (2009) "A simulation approach to construction management education." *Proc. 2009 ASEE Annual Conference*, Austin, TX.
35. Rachmat, F. H., **Song, L.**, and Lee, S. (2009) "Applying stochastic linear scheduling method to pipeline construction." *Proc. 3rd International Conf. on Const. Eng. & Manag.*, Jeju, Korea.
36. Lee, S., Spencer, H., **Song, L.**, and Kim, K. (2009) "Development of a front end planning tool for sustainability." *Proc. 3rd International Conf. on Const. Eng. & Manag.*, Jeju, Korea.
37. Lee, S., Fuzetti, C., **Song, L.**, and Kim, K. (2009) "Using process mapping in construction process to reduce change orders." *Proc. 3rd International Conf. on Const. Eng. & Manag.*, Jeju, Korea.
38. **Song, L.**, Ramos, F., and Arnold, K. (2008) "A framework for real-time simulation of heavy construction operations." *Proc. 2008 Winter Simulation Conference*, Miami, FL.
39. **Song, L.**, Liang, D., and Javkhedkar, A. (2008) "A case study on applying lean construction to concrete construction projects." *Proc. 44th ASC International Conf.* ASC. Auburn, AL.
40. Liang, D., and **Song L.** (2008) "Development of a task-based safety model for construction projects." *Proc. W99 CIB Conference 2008*, CIB, Gainesville, FL.
41. **Song, L.** (2007) "Progress measurement using CAD-based vision system." *Proc. 2007 Construction Research Congress*. ASCE, Freeport, Bahamas.
42. **Song, L.**, Mohamed, Y., and AbouRizk, S. M. (2006) "Contractor's early involvement in design." *Proc. 2006 AACE International Transaction*, AACE, Las Vegas, NV.
43. **Song, L.**, and AbouRizk, S. M. (2006) "Modeling labor productivity in steel fabrication." *Proc. 2006 AACE International Transaction*. AACE, Las Vegas, NV.
44. **Song, L.**, and AbouRizk, S. M. (2003) "Building a virtual shop model for steel fabrication." *Proc. 2003 Winter Simulation Conference*. ACM/SIGSIM, New Orleans, LA.
45. **Song, L.**, Allouche, M., and AbouRizk, S. M. (2003) "Measuring and estimating steel drafting productivity." *Proc. 2003 Construction Research Congress*. ASCE, Honolulu, HI.

Technical Reports (4)

46. **Song, L.** and Ritchie, E. (2013) "Look-ahead scheduling for electrical contractors." Publication Index F3305, ELECTRI International, Bethesda, MD. 71 pages.
47. Ritchie, E. and **Song, L.** (2013) "A survey on look-ahead scheduling practice among electrical contractors." University of Houston, Houston, TX. 11 pages.
48. **Song, L.** and Shalini, H. (2009) "A survey on current EVM practice and future trends." Project Management Institute, Newtown Square, PA. 98 pages.
49. **Song, L.** and Javkhedkar, A. (2007) "Lean construction applications in concrete construction operations." Baker Concrete Construction Inc., Houston, TX. 39 pages.
50. **Song, L.**, Dickson, D., Buchanan, S., and Alexander, S. et al. (2006) "GSI business process map and improvement." Gulf States Inc., Freeport, TX. 80 pages.
51. **Song, L.** (2005) "Integrating construction supply chain through contractor's early involvement: opportunities and verification." University of Houston, Houston, TX. 63 pages.

Presentations and Invited Talks (17)

1. **Song, L.** (2012) "Effective look-ahead scheduling for electrical contractors." *2012 Electri International Council Meeting*, Miami, FL. January, 2012.
2. **Song, L.** (2009) "Simulation-based construction planning & control." *Invited research seminar*, Tianjin, China. June, 2010.
3. **Song, L.** (2009) "Incorporating virtual field information in learning construction operations." *2009 ASEE Annual Conference*, Austin, TX. June, 2009.
4. **Song, L.** (2009) "A simulation approach to construction management education." *2009 ASEE Annual Conference*, Austin, TX. June, 2009.

5. **Song, L.** (2009) "Real-time simulation for look-ahead scheduling of heavy construction projects." *2009 Construction Research Congress*. ASCE, Seattle, WA. April 2009.
6. **Song, L.** (2009) "Project planning & control: Best practice & new development." Texas Manufacturing Assistance Center, Houston, TX. June 2009.
7. **Song, L.** (2009) "Project planning and Primavera P6." A training workshop for Libyan Housing and Infrastructure Board (HIB) employees, Houston, TX. July 2009.
8. **Song, L.** (2009) "Construction planning & control revisited: A simulation approach." Invited research presentation, Texas A&M University, College Station, TX. April 2009.
9. **Song, L.** (2008) "A framework for real-time simulation of heavy construction operations." *Proc. 2008 Winter Simulation Conference*, Miami, FL.
10. **Song, L.** (2008) "A case study on applying lean construction to concrete construction projects." *Proc. 44th ASC International Conf.* ASC. Auburn, AL. April 2008.
11. **Song, L.** (2007) "Experiments of CAD-based vision system at the S-Zorb project." Fluor Corporation, Sugar Land, TX. May 2007.
12. **Song, L.** (2007) "Progress measurement using CAD-based vision system." *2007 Construction Research Congress*. ASCE, Freeport, Bahamas. May 2007.
13. **Song, L.** (2006) "GSI business process map and improvement." Gulf States Inc., Freeport, TX. December, 2006.
14. **Song, L.** (2006) "Modeling labor productivity in steel fabrication." *50th AACE International Annual Conference*, AACE, Las Vegas, NV. June 2006.
15. **Song, L.** (2003). "Measuring and estimating steel drafting productivity." *2003 Construction Research Congress*, ASCE, Honolulu, Hawaii, March 2003.
16. **Song, L.** (2002). "Neural network applications in steel construction." *The 9th Annual Canada Construction Research Forum*, Edmonton, Alberta, November 2002.
17. **Song, L.** (2002). "Labor productivity modeling for steel fabrication and erection projects." *Canadian Society of Civil Engineering Annual Conference 2002*, CSCE, Montreal, Quebec, June 2002.

RESEARCH GRANTS

1. Gao, L., Senouci, A., **Song, L.** (2015). "Transportation and Economic Impact of Texas Shortline Railroads." TxDOT. 9/2015-8/2016. Co-PI.
2. **Song, L.** (2012). "Effective look-ahead scheduling for electrical contractors." *Electri International*. 7/2012-6/2013. PI.
3. Gao, L., **Song, L.** (2012). "Study of short term skid improvements by light texturing with a milling machine." TxDOT. 9/2012-8/2014. Co-PI.
4. **Song, L.**, Zhang, X. and Ruwanpura, J. (2009). "A global and cross-industry perspective on EVM practice and future trends." *Project Management Institute (PMI)*. 5/2008-4/2009. PI.
5. **Song, L.** (2008) "A real-time construction site simulator using computer vision and location tracking." *Fluor Partner Grant*, Fluor Corporation. 9/2008-8/2009. PI.
6. Barbieri, E., Lee, S., and **Song, L.** (2007) "Center for Technology Literacy: An upward mobility strategy for economic growth." Economic Development Administration, *US Dept. of Commerce*. 7/2007-6/2010. Co-PI.
7. **Song, L.** (2007) "Implementing a CAD-based vision system for progress measurement." *Fluor Partner Grant*, Fluor Corporation. 9/2007-8/2008. PI.
8. **Song, L.** (2006) "Implementing and measuring lean applications in concrete construction." *Baker Concrete Construction Inc.*, 5/2006-12/2006. PI.
9. **Song, L.** (2006) "Construction Management Laboratory: Automated project progress measurement using CAD-based vision system." *Fluor Partner Grant*, Fluor Corporation. 9/2006-8/2007. PI.
10. **Song, L.** (2006) "Mapping project execution process at Gulf States Inc." *Gulf States Inc.*, Freeport, TX. 9/2006-12/2006. PI and Faculty advisor.
11. Lee, S. and **Song, L.** (2005) "A virtual construction environment for construction management learning", FDIP Program B, *University of Houston*, 5/2005-4/2006. Co-PI.

12. **Song, L.** (2005) "Development of a web-based construction operation simulation environment", FDIP Program A, *University of Houston*, 5/2005-4/2006. PI.
13. **Song, L.** (2004) "Contractor's early involvement in industrial construction projects", New Faculty Grant, *University of Houston*, 2/2005-8/2005. PI.
14. **Song, L.** (2004) "Incorporating model uncertainty in risk analysis", Small Grant, *University of Houston*, 12/2004-8/2005. PI.
15. **Song, L.** (2004) "A learning Engineering Procurement Construction (EPC) project modeling framework for industrial construction." HEAF Startup Grant, *University of Houston*. 8/2004-7/2005. PI.

TEACHING EXPERIENCE

University of Houston, Houston, Texas, 2004 to present.

1. CNST1361 Construction Management
2. CNST2341 Construction Documents
3. CNST3331 Construction Planning and Scheduling
4. CNST3365 Construction Estimating for Capital Project
5. CNST4381 Reinforced Concrete Design and Building Codes
6. CNST6100 Construction Management Seminar
7. CNST6300 Project Planning and Management
8. CNST6303 Quality Control and Improvement
9. CNST6340 Best Practices in the Construction Industry
10. CNST6360 Computer Applications in Construction Management
11. CNST6390 Leadership for Construction Managers

University of Alberta, Edmonton, Alberta, Canada, fall 2001 and 2002.

12. CIVE603 Computer Applications in Construction

STUDENTS SUPERVISION & AWARDS

Faculty Advisor for Student Awards/Scholarships

1. Elnaz Amiri, Winner of the best poster award, 2014 COT Graduate Research Day competition, "Automating laydown yard material identification and locatization." University of Houston, April 2014.
2. Eric Talley, Outstanding poster award, 9th annual Undergraduate Research Day, University of Houston, November 2013
3. Mark Weishuhn, Provost's Undergraduate Research Scholarship (PURS), "Rapid 3D construction site modeling." University of Houston, spring 2011.
4. Yash Tiwari, Winner of the second place of the 2009 COT Graduate Research Day competition, "Project controls through real time simulation & global positioning system." College of Technology, University of Houston, Mar. 2009.
5. Dylan Williams, Provost's Undergraduate Research Scholarship (PURS), "Lean construction." University of Houston, fall 2008.
6. Awitash Tiwari, Winner of the first place of the 2007 COT Graduate Research Day competition, "Applying CAD-based vision to project controls." College of Technology, University of Houston, Mar. 2007.

PROFESSIONAL SERVICE

University/Departmental Service

1. Faculty Advocate, Center for ADVANCING UH Faculty Success, University of Houston, 2014-present.
2. Tenure and Promotion Committee, College of Technology, University of Houston, 2012-2014.
3. Scholarship Committee, College of Technology, University of Houston, 2013-2014.
4. Graduate Program Coordinator, Construction Management, College of Technology, University of Houston, 2006-Present.
5. Graduate Academic Committee, College of Technology, University of Houston, 2010-2012.
6. Equipment and Facilities Committee, College of Technology, University of Houston, 2006-2009.
7. Construction Management Faculty Search Committee, University of Houston, 2005-Present.
8. Faculty Advisor, AGC student chapter at the University of Houston, 2012-present.
9. Faculty Advisor, Sigma Lambda Chi International (SLC) chapter at the University of Houston, 2005-present.

Professional Societies

1. Committee member, CII Academic Committee, Construction Industry Institute, 2010-Present.
2. Session Chair, ASC Annual Conference, College Station, TX. Apr. 2015.
3. Session Chair, Winter Simulation Conference (WSC), Miami, FL. Dec. 2008.
4. Moderator assistant, Engineering Technology Leadership Institute (ETLI) conference, Kemah, TX. Oct. 2004.
5. Journal reviewer for:
 - Journal of Construction Engineering and Management (ASCE), since 2004.
 - Canadian Journal of Civil Engineering (CSCE), since 2004.
 - Construction Management and Economics, since 2006.
 - Data & Knowledge Engineering, since 2005.
 - Journal of Applied Science and Engineering Technology, since 2006.
6. Conference reviewer for:
 - World Congress on Computer Science and Information Engineering, 2010.
 - Construction Research Congress (CRC), 2007 and 2009.
 - Associated Schools of Construction (ASC) annual conference, 2009.
 - American Society for Engineering Education (ASEE) annual conference, 2009.
 - Canadian Society for Civil Engineering (CSCE) annual conference, 2005.
 - Winter Simulation Conference (WSC), 2005 and 2008.

Community Service

1. Speaker, Construction management training workshop, Texas Manufacturing Assistance Center (TMAC), Houston, TX. June 2009.
2. Organizer, Three training workshops to contractors in the greater Houston area, University of Houston, Sugar Land, TX. March - April 2008.
3. Speaker, Academic Achievers Program's visit to the Construction Graphics and Material labs, University of Houston, Houston, TX. July 2008.
4. Proctor, Constructor certification examination, American Institute of Constructors (AIC), Houston, TX. 2005 – present.

PROFESSIONAL MEMBERSHIPS

1. Member, American Society of Civil Engineers (ASCE), since 2007.
2. Member, American Society for Engineering Education (ASEE), since 2007.
3. Member, Project Management Institute (PMI), since 2009.
4. Honorary member, Sigma Lambda Chi International (SLC), since 2005.
5. Member, Sigma Xi The Scientific Research Society, since 2007.
6. Member, International Chinese Transportation Professional Association, since 2009.

HONORS & AWARDS

1. Fluor Award for Faculty Teaching Excellence, College of Technology, University of Houston, 2015.
2. Teacher of the year, Construction Management Department, University of Houston, 2013.
3. Fluor Award for Faculty Research Excellence, College of Technology, University of Houston, 2010.
4. Best Peer Reviewed Paper Award, Journal of Management in Engineering, ASCE. 2009.
5. Provost's Faculty Travel Fund Award, University of Houston, Houston, TX. 2008-2009.
6. Mary Louise Imrie Graduate Student Award, University of Alberta, Canada. 2003.
7. Robert Stollery/USF and G Insurance Company of Canada Award in Construction Engineering and Management, Canada. 2002.
8. Student Award - second prize, Chinese National Electricity Association, China. 1995.
9. Best Student Award, Chinese Society of Water Resources, China. 1994.
10. Tianjin University Scholarship, First Prize, Tianjin University, China. 1993-1996.