

Jin Zhu

Assistant Professor
Civil and Environmental Engineering
University of Connecticut
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RESEARCH INTEREST

❖ **Societal challenge**

Resilient infrastructure, resilient communities, smart cities, resource efficiency, disaster response and recovery

❖ **Research theory**

Complex system science, network science, contingency theory, decision theory

❖ **Research method**

Dynamic network analysis, agent-based modeling, stochastic simulation, case study

ACADEMIC APPOINTMENT

Assistant Professor

2017.08-present

Civil and Environmental Department

University of Connecticut

- Research and teaching at both the undergraduate and graduate levels with primary duties in the areas of Construction Engineering & Management and Transportation courses

Postdoctoral Research Associate

2016.08-2017.07

Zachry Department of Civil Engineering

Texas A&M University

- Data analysis and report writing for NSF project: Assessment of Cascading Failures and Collective Recovery of Interdependent Critical Infrastructure in Catastrophic Disasters: A Study of 2015 Earthquake in Nepal
- Mentored graduate and undergraduate students in research activities
- Research proposal development

Graduate Assistant

2010.08-2016.08

OHL School of Construction; Civil and Environmental Engineering Department

Florida International University

- Developed a system-of-systems framework and dynamic network simulation method in assessing project emergent properties (e.g., vulnerability, adaptive capacity, resilience)
- Conducted 3 case studies of complex construction projects using the proposed framework and methodology
- Published research findings in interdisciplinary journals and conferences

Research Assistant

2014.08-2016.08

Construction Industry Institute Research Team 322

- Identified core project control metrics and reliability factors through literature review, questionnaire survey, case studies, and Delphi sessions
- Developed a computer-based Project Controls Improvement (PCI) tool for practitioners to learn and improve their project controls
- One of the principal authors of project final reports

Research Assistant

Construction Management & Real Estate Department
Southeast University, China

2009.08-2010.08

- Conducted data collection and analysis for energy consumption research in building construction

EDUCATION

Florida International University 2016

Doctor of Philosophy in Civil Engineering

Dissertation Title: "A System-of-Systems Framework for Assessment of Resilience in Complex Construction Projects"

Dissertation Advisor: Prof. Ali Mostafavi

Florida International University 2015

Master of Public Administration

Graduate certificate in *Homeland Security and Emergency Management*

Southeast University, China 2009

Bachelor of Science in Construction Management

Minor in *Accounting*

HONORS AND AWARDS

Best Paper Award

2015 ASCE International Workshop on Computing in Civil Engineering, Austin, TX

Best Paper from the Visualization, Information Modeling, and Simulation (VIMS) committee to the paper entitled "An Integrated Framework for the Assessment of the Impacts of Uncertainty in Construction Projects Using Dynamic Network Simulation"

Best Poster Award, Second-Place

2016 ASCE Construction Research Congress, San Juan, Puerto Rico

The second-place award to the poster entitled "Building Safe-to-Fail Project Systems: Assessment of Resilience in Projects using Dynamic Meta-Network Simulation"

Dissertation Year Fellowship

Florida International University

A merit-based scholarship awarded to highly-qualified doctoral students who are conducting outstanding research in their discipline and have established a notable record of publication during the data analysis and writing phase.

Best Poster Competition Finalist and Travel Grant

2016 Construction Industry Institute (CII) Annual Conference, National Harbor, MD

One of the top 10 finalists in poster competition with the poster entitled “Building Safe-to-Fail Project Systems: Assessment of Resilience in Projects using Dynamic Meta-Network Simulation”

Best Poster Competition Finalist and Travel Grant

2015 Construction Industry Institute (CII) Annual Conference, Boston, MA

One of the top 10 finalists in poster competition with the poster entitled “Meta-Network Modeling Framework for Integrated Assessment of Risk, Vulnerability, and Resilience in Complex Construction Projects”

Winter Simulation Conference Travel Grant

Association for Computing Machinery (ACM)

Travel grant supporting participation in 2014 Winter Simulation Conference

Best Oral Presentation Award, Second-Place

Florida International University Graduate Student Scholarly Forum 2016

The second-place award in the engineering panel competition to the oral presentation entitled “Ex-Ante Assessment to Uncertainty in Complex Construction Project Organizations”

Best Poster Award, Second-Place

Florida International University Graduate Student Scholarly Forum 2015

The second-place award in the engineering panel competition to the poster entitled “Bouncing Back in the Face of Uncertainty: Ex-Ante Analysis of Organizational Vulnerability in Complex Construction Projects”

Best Poster Award, Third-Place

Florida International University Graduate Student Scholarly Forum 2014

The third-place award in the engineering panel competition to the poster entitled “An Integrated Project Performance Assessment Framework: A System-of-Systems Approach”

FIU Travel Grant

Graduate and Professional Student Committee, Florida International University

Travel grant supporting participation in 2016 ASCE Construction Research Congress

FIU Travel Grant

Graduate and Professional Student Committee, Florida International University

Travel grant supporting participation in 2015 ASCE International Workshop on Computing in Civil Engineering

Honor Graduate

Southeast University, China, 2009

Excellent Undergraduate Thesis Award

Southeast University, China, 2009

PUBLICATIONS**1. Refereed Journal Articles****1.1 Journal articles published or accepted**

J7. Zhu, J., Manandhar, B., Truong, J., Ganapati, N. E., Pradhananga, N., Davidson, R., and Mostafavi, A. (2017). Assessment of Infrastructure Systems Resilience in the 2015 Gorkha Earthquake. *Earthquake Spectra*. 10.1193/121116EQS231M

J6. Zhu, J. and Mostafavi, A. (2017). Performance Assessment in Complex Engineering Projects Using a Systems-of-Systems Framework. *IEEE Systems Journal*. 10.1109/JSYST.2017.2671738

J5. Zhu, J. and Mostafavi, A. (2017). Discovering Complexity and Emergent Properties in Project Systems: A New Approach to Understanding Project Performance. *International Journal of Project Management*, 35(1), 1-12.

J4. Zhu, J., and Mostafavi, A. (2017). Meta-Network Framework for Integrated Performance Assessment under Uncertainty in Construction Projects. *ASCE Journal of Computing in Civil Engineering*, 31(1), 04016042.

J3. Zhu, J., and Mostafavi, A. (2014). A System-of-Systems Framework for Performance Assessment in Complex Construction Projects. *Organization, Technology & Management in Construction: An International Journal*, 6(3), 1083-1093. (**Invited Paper from 2014 Project Management Symposium**)

J2. Li, D. Z., **Zhu, J.**, Hui, E. C. M., Leung, Y. P., and Li, Q. M. (2011). An Emergy Analysis-Based Methodology for Eco-Efficiency Evaluation of Building Manufacturing. *Ecological Indicators*, 11(5), 1419-1425.

J1. Wang, X. X., **Zhu, J.**, Li, Q. M., and Deng, X. P. (2010). Analysis of Top 200 Design Firms in International Construction Market of 2008. *Construction Economy*, 2, 26-28. (In Chinese)

1.2 Journal articles under review

J1r. Orgut, R. E., **Zhu, J.**, Batouli, M., Mostafavi, A., Jaselskis, E. (20xx). Metrics That Matter: Core Metrics and Indicators for Improved Project Controls and Analytics. *ASCE Journal of Construction Engineering and Management*. (under review)

J1r. Orgut, R. E., Batouli, M., **Zhu, J.**, Mostafavi, A., Jaselskis, E. (20xx). Critical Factors for Improving Reliability of Project Control Metrics throughout the Project Life-cycle. *ASCE Journal of Management in Engineering*. (under review)

1.3 Journal articles in preparation

J2p. **Zhu, J.** and Mostafavi, A. (20xx). Assessment of Resilience in Construction Projects Using a Meta-Network Simulation Methodology. To be submitted to *Computer-Aided Civil and Infrastructure Engineering*.

J1p. Zhu, J. and Mostafavi, A. (20xx). A resilience-based Approach for Construction Project Planning and Management: A Paradigm Shift. To be submitted to Management Science.

2. Refereed Conference Papers

2.1 Papers in conference proceedings (* Presented by me)

C12. Zhu, J., Mostafavi, A., and Whyte J. (2017). Towards Systems Integration Theory in Megaprojects: A System-of-Systems Framework. Lean & Computing in Construction Congress, July 4-12, Heraklion, Crete, Greece.

C11*. Zhu, J., and Mostafavi, A. (2016). Dynamic Meta-Network Modeling for Integrated Project Performance Assessment under Uncertainty. ASCE Construction Research Congress, May 31-June 2, San Juan, Puerto Rico.

C10*. Orgut, R. E., Batouli, M., **Zhu, J.,** Mostafavi, A., and Jaselskis, E. (2016). Metrics That Matter: Evaluation of Metrics and Indicators for Project Progress Measurement, Performance Assessment, and Performance Forecasting during Construction. ASCE Construction Research Congress, May 31-June 2, 2016, San Juan, Puerto Rico.

C9. Zhu, J., and Mostafavi, A. (2015). An Integrated Framework for Ex-Ante Assessment of Performance Vulnerability in Complex Construction Projects. International Construction Specialty Conference, Canadian Society for Civil Engineering, June 8-10, 2015, Vancouver, Canada.

C8. Orgut, R., Zhu, J., Batouli, M. Mostafavi, A., and Jaselskis, E. (2015). A Review of the Current Knowledge and Practice related to Project Progress and Performance Assessment. International Construction Specialty Conference, Canadian Society for Civil Engineering, June 8-10, 2015, Vancouver, Canada.

C7*. Zhu, J., and Mostafavi, A. (2015). An Integrated Framework for the Assessment of the Impacts of Uncertainty in Construction Projects Using Dynamic Network Simulation. ASCE International Workshop on Computing in Civil Engineering, June 21-23, 2015, Austin, TX. **(Best Paper Award from VIMS Committee)**

C6*. Batouli, M., Swei, O.A, **Zhu, J,** Gregory, J., Kirchain, R., and Mostafavi, A. (2015). A Simulation Framework for Network Level Cost Analysis in Infrastructure Systems. ASCE International Workshop on Computing in Civil Engineering, June 21-23, 2015, Austin, TX.

C5*. Zhu, J., and Mostafavi, A. (2014). Integrated Simulation Approach for Assessment of Performance in Construction Projects: A System-of-Systems Framework. Winter Simulation Conference, December 7-10, 2014, Savannah, GA.

C4*. Zhu, J., and Mostafavi, A. (2014). An Integrated Framework for Bottom-Up Assessment of Performance in Construction Projects. Project Management Symposium, June 9-10, 2014, College Park, MD. **(Invited to submit as a journal article in Organization, Technology & Management in Construction: An International Journal)**

C3. Zhu, J., and Mostafavi, A. (2014). Project Organizations as Complex System-of-Systems: Integrated Performance Assessment at the Interface of Emergent Properties, Complexity, and Uncertainty. Engineering Project Organizations Conference, July 29-31, 2014, Winter Park, Colorado.

C2*. Zhu, J., and Mostafavi, A. (2014). System-of-Systems Modeling of Performance in Complex Construction Projects: A Multi-Method Simulation Paradigm. ASCE International Conference on Computing in Civil and Building Engineering, June 23-25, 2014, Orlando, FL.

C1. Zhu, J., and Mostafavi, A. (2014). Towards a New Paradigm for Management of Complex Engineering Projects: A System-of-Systems Framework. IEEE Systems Conference, March 31 – April 3, 2014, Ottawa, Canada.

2.2 Conference Paper Accepted

C1a. Zhu, J., and Mostafavi, A. (2017). Characterization of the Underlying Mechanisms of Vulnerability in Complex Projects Using Dynamic Network Simulation. Winter Simulation Conference, December 1-3, Las Vegas, NV.

2.3 Conference under Review

C1r. Zhu, J., and Mostafavi, A. (2018). Enhancing Resilience in Disaster Response: A Meta-Network Analysis Approach. ASCE Construction Research Congress, April 2-5, 2018, New Orleans, Louisiana (under review).

3. Reports

R1. Construction Industry Institute. (2016). Metrics That Matter: Improving Project Progress and Performance Assessment. Austin, TX.

R2. Construction Industry Institute. (2016). Project Control Improvement (PCI) Software and User Guide. Austin, TX.

4. Posters

P9. Zhu, J., and Mostafavi, A. (2016). Building Safe-to-Fail Project Systems: Assessment of Resilience in Projects using Dynamic Meta-Network Simulation. Construction Industry Institute Annual Conference, August 1-3, 2016, National Harbor, MD. **(One of the top 10 Best Poster Competition Finalists and invited to present at 2016 CII Annual Conference)**

P8. Zhu, J., and Mostafavi, A. (2016). Building Safe-to-Fail Project Systems: Assessment of Resilience in Projects using Dynamic Meta-Network Simulation. ASCE Construction Research Congress, San Juan, Puerto Rico. **(Recipient of the Second-Place Poster Award)**

P7. Zhu, J., and Mostafavi, A. (2015). Meta-Network Modeling Framework for Integrated Assessment of Risk, Vulnerability, and Resilience in Complex Construction Projects. Construction Industry Institute Annual Conference, August 1-3, 2016, Boston, MA. **(One of the**

top 10 Best Poster Competition Finalists and invited to present at 2015 CII Annual Conference)

P6. Zhu, J., and Mostafavi, A. (2015). Bouncing Back in the Face of Uncertainty: Ex-Ante Analysis of Organizational Vulnerability in Complex Construction Projects. Florida International University Graduate Student Scholarly Forum, April 10, 2015, Miami, FL. **(Recipient of the Second-Place Poster Award in Engineering Panel)**

P5. Zhu, J., and Mostafavi, A. (2014). Integrated Simulation Approach for Assessment of Performance in Construction Projects: A System-of-systems Framework. Winter Simulation Conference PhD Colloquium, December 7-10, 2014, Savannah, GA.

P4. Zhu, J., and Mostafavi, A. (2014). Ex-Ante Assessment of Performance in Construction Projects: A System-of-Systems Approach. ASCE Construction Research Congress, May 19-21, 2014, Atlanta, GA.

P3. Zhu, J., and Mostafavi, A. (2014). An Integrated Project Performance Assessment Framework: A System-of-Systems Approach. FIU Graduate Student Scholarly Forum, April 10, 2014, Miami, FL. **(Recipient of the Third-Place Poster Award in Engineering Panel)**

P2. Zhu, J., and Mostafavi, A. (2014). An Integrated Project Performance Assessment Framework: A System-of-Systems Approach. Florida International University Civil and Environmental Engineering Department Graduate Research Day Poster Session, February 21, 2014, Miami, FL.

P1. Zhu, J., and Mostafavi, A. (2013). System-of-Systems Assessment of Performance in Complex Construction Projects. Florida International University Civil and Environmental Engineering Department Graduate Research Day Poster Session, September 26, 2013, Miami, FL.

INVITED TALKS

T2. Invited webinar presentation “Towards a New Paradigm for Management of Complex Engineering Projects: A System-of-Systems Framework” at System of Systems Engineering Collaborators Information Exchange (SoSECIE) hosted by Office of the Secretary of Defense (OSD), November 10, 2015.

T1. Invited webinar presentation “Towards a New Paradigm for Management of Complex Engineering Projects: A System-of-Systems Framework” at International Council on System Engineering (INCOSE) New Mexico Chapter, February 10, 2016.

TEACHING AND MENTORING EXPERIENCE

Teaching Assistant

Florida International University

[BCN 3727] Construction Site Work and Equipment

Spring 2016, Fall 2015, Fall 2013

- Gave guest lectures in Building Foundations and Pile Driving, Cranes and Lifting Equipment
- Held weekly office hours to answer questions and communicate with students
- Prepared course assignments, solutions, and grade assignments and exams

[BCN 3753] Financial Management of Construction Organizations Spring 2015, Fall 2014

- Gave guest lectures in Fundamental Concepts in Financial Management, Analysis of Financial Statements
- Held weekly office hours to answer questions and communicate with students
- Prepared course assignments, solutions, and grade assignments and exams

[BCN 3761] Construction Documentation and Communication Spring 2014

- Gave guest lectures in Introduction to Construction Specifications Construction Bonds, Guaranties & Warranties
- Held weekly office hours to answer questions and communicate with students
- Prepared course assignments, solutions, and grade assignments and exams

[CCE 4001] Heavy Construction Fall 2010-Fall 2013

- Held weekly office hours to answer questions and communicate with students
- Prepared course assignment solutions, and grade assignments and exams

[CCE 5405] Advanced Heavy Construction Fall 2010-Fall 2013

- Held weekly office hours to answer questions and communicate with students
- Prepared course assignment solutions, and grade assignments and exams

[CCE 4031] Project Planning for Civil Engineers Fall 2010-Fall 2013

- Held weekly office hours to answer questions and communicate with students
- Prepared course assignment solutions, and grade assignments and exams

Mentoring graduate and undergraduate students in research activities Fall 2013-present

- Mentored graduate and undergraduate students in research activities including data collection, data analysis, simulation, presentation, and writing
- Evaluated students' progress and performance and provided feedbacks

PROFESSIONAL DEVELOPMENT

- ❖ University teaching and learning workshops for graduate teaching assistants at Florida International University
- ❖ Proposal writing seminar "How to Write Winning NSF Proposals" at Texas A&M University

PROFESSIONAL SERVICE

1. Volunteer

Volunteer at Florida International University Society of Women Engineers

- Mentored high-school female students during visits to FIU Engineering Center

Volunteer at the 2015 South Florida Regional Competition of the National Engineers Week

- Served as judge in the National Engineers' Future City Competition, participated by sixth, seventh and eighth grade students interested in math, science and engineering

Volunteer at 2015 Miami-Dade STEM Expo's Science and Engineering Fair

- Served as judge in competitions of elementary school students in order to encouraging and guiding them to participate in the fields of science, technology, arts, engineering, and mathematics (STEAM)

Judge at 2014 FIU McNair Scholars Research Conference

- Served as judge in the poster panel of FIU McNair Scholar Research Conference which provides opportunities for undergraduate students to share their work and prepare themselves for graduate schools

2. Organizer

Organizer of OHL School of Construction State-of-the-art in Construction Research Webinars

- Identified and invited potential presenters
- Organized and hosted webinar presentations "Situational Awareness for Construction Safety Risks Management" (April 12, 2016), and "Activity Recognition of Construction Equipment and Workers using Smartphones" (March 22, 2016)

Student assistant at 2013 FIU/MIT Transportation Infrastructure Sustainability Summit

- Helped with registration
- Took detailed notes of talks and presentations for the chair

3. Review Service

Reviewer, IEEE Systems Journal

Reviewer, International Journal of Project Management

Reviewer, 2017 IEEE Systems Conference

Reviewer, 2016 ASCE Construction Research Congress

Reviewer, 2016 IEEE Systems Conference

Reviewer, 2016 IEEE International Symposium on Systems Engineering

Reviewer, 2016 IEEE Systems Conference

Reviewer, 2015 IEEE International Symposium on Systems Engineering

CERTIFICATION AND LICENCSE

Engineering in Training (EIT) since 2013

COMPUTER SKILLS

Programming Languages: Java, C++, MATLAB, MATHCAD

Applications: AnyLogic, ORA, SPSS, Autodesk Revit, Primavera P6