Pedram Ghannad, Ph.D., PMP, LEED GA

Assistant Professor, Department of Engineering Technology, Texas State University

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EDUCATION

Ph.D., Construction Management (2017-2021)
Louisiana State University, Baton Rouge, Louisiana, USA.
- *Dissertation*: BIM-based generative modular housing design and implications for post-disaster housing recovery (defended on 05/17/2021)
- *Advisor*: Dr. Yong-Cheol Lee

M.Sc., Computer Science. (2023-2026)
Georgia Institute of Technology.

M.Sc., Construction Engineering and Management. (2011-2013)
Sharif University of Technology, Tehran, Iran.
- *Thesis*: *Stochastic Location-Based Management System for Planning Linear Construction Projects*
- *Advisor*: Dr. Mohammad Mehdi Mortaheb

B.Sc., Civil Engineering. (2006-2011)
Amir Kabir University of Technology, Tehran, Iran.

SOFTWARE AND TECHNICAL SKILLS

- **Programming:** Python, Java, JavaScript, R, MATLAB
- **Data Analytics and Visualization:** MySQL, Pandas, NumPy, PySpark, Apache Spark, Power BI, Tableau, Matplotlib, Seaborn, Plotly, D3.js
- **AI and Machine Learning:** scikit-learn, TensorFlow, PyTorch, XGBoost, OpenCV, scikit-image
- **Modeling, Simulation, and Optimization:** NetworkX, AnyLogic, SimPy, Arena, Vensim, CPLEX, Pyomo
- **GIS and Spatial Analysis:** ArcGIS, QGIS, GeoPandas, Rasterio, PySAL
- **Construction and Engineering Software:** MS Project, Primavera P6, Navisworks, AutoCAD, Revit, Bluebeam, Procore, Autodesk Construction Cloud

ACADEMIC AND INDUSTRY APPOINTMENTS

Assistant Professor. (2026-Present)
Department of Engineering Technology, Texas State University
Tasks: Teaching Undergraduate and Graduate Courses, Conducting Scholar Activities, and Providing Departmental services.

Assistant Professor. (2022-2026)
Department of Civil Engineering and Construction, Bradley University
Tasks: Teaching Undergraduate and Graduate Courses, Conducting Scholar Activities, and Providing Departmental services.

Postdoctoral Research Associate. (2021-2022)

Computing and Informatics in Construction and Infrastructure (CICI) Laboratory, Bert S. Turner Department of Construction Management, Louisiana State University

Supervisor: Dr. Yong-Cheol Lee (yclee@lsu.edu)

Projects:

[1] Developing an Automated Disaster Resilience Evaluation System using a Virtual Building Design, sponsored by the Proof-of-Concept/Prototype Initiative, Louisiana Board of Regents

[2] Developing an AI-based Digital Twin for a Modular Building Incorporating Deep Reinforcement Learning for Process Optimization, collaborated with Boxy Construction Company.

Research Assistant. (2018-2021)

Bert S. Turner Department of Construction Management, Louisiana State University

Advisor: Dr. Yong-Cheol Lee (yclee@lsu.edu)

Projects:

[1] Deep reinforcement learning-based prioritization for rapid post-disaster recovery of transportation infrastructure systems, sponsored by the Department of Transportation, Tran-SET

[2] A Data-Driven Dynamic Optimization Framework for Modular Construction-Based Rapid Post-Flood Recovery of Residential Houses and Neighboring Communities, sponsored by Louisiana Economic Development Assistantship (EDA) Fund

[3] Developing a GAN-based automated modular housing design system using deep learning and Building Information Modeling (BIM)

[4] Graphical Programming and Node-based Rule Definition and Checking Process for BIM Models, sponsored by Vectorworks and Georgia Institute of Technology

Teaching Assistant. (2017-2018)

Bert S. Turner Department of Construction Management, Louisiana State University

Advisor: Dr. Yong-Cheol Lee (yclee@lsu.edu)

Course: Construction Plan Reading

Control project expert. (2017)

Pars Geometry Consulting Engineers, Tehran, Iran.

Project Management Office expert. (2015 and 2016-2017)

Datis Engineering and Construction Group, Tehran, Iran.

Project Management Office expert. (2014-2015)

Perlite Company, Tehran, Iran.

Quality Control expert (2011-2014) (part-time)

Kian Parto Azma Consulting Engineers, Tehran, Iran.

RESEARCH INTERESTS / EXPERTISE

- Intelligent Decision-making in Construction Management
- Disaster Resilience and Recovery of the Built Environment
- AI-based Design and Planning in Construction
- BIM-based Automated Code Compliance Checking
- Automation in Modular Construction

HONORS, AWARDS, AND FELLOWSHIPS

- **Recipient of NSF EPIIC Award, Co-PI (2025–2028).** Building Relationships in Innovation and Development for Growth in Emerging Technologies (BRIDGE-TECH)- $400,000.
- Recipient of Caterpillar Fellowship Award (2024–2025).
- Recipient of Louisiana Economic Development Assistantship (EDA) scholarship (2018-2021).
- Ranked 960th among more than 500,000 participants in the National University Entrance Exam for undergraduate studies.
- Ranked 43rd among more than 20,000 participants in the National University Entrance Exam for graduate studies in Civil Engineering.
- Ranked 1st among the class of 2011, department of construction management, Sharif University of Technology

PUBLICATIONS

Peer-reviewed Journal Articles (Published/Accepted):

[1] Deria, A., **Ghannad, P**., & Lee, Y. C. (2024). Dynamic Real-Time Optimization of Modular Unit Allocation to Off-Site Facilities in Postdisaster Reconstruction Using Deep Reinforcement Learning. Journal of Management in Engineering, 40(4), 04024021.

[2] **Ghannad, P**., & Lee, Y. C. (2023). Optimizing Modularization of Residential Housing Designs for Rapid Postdisaster Mass Production of Housing. Journal of Construction Engineering and Management, 149(7), 04023046.

[3] **Ghannad, P.**, & Lee, Y. C. (2022) Optimizing modularization of residential housing designs for rapid post-disaster mass production of housing. Journal of Construction Engineering and Management (accepted for publication)

[4] **Ghannad, P.**, & Lee, Y. C. (2022). Automated modular housing design using a module configuration algorithm and a coupled generative adversarial network (CoGAN). Automation in Construction, 139, 104234**.**

[5] **Ghannad**, **P**., Lee, Y. C., & Choi, J. O. (2021). Prioritizing Post-disaster Recovery of Transportation Infrastructure Systems Using Multiagent Reinforcement Learning. *Journal of Management in Engineering*, 37(1), 04020100.

[6] **Ghannad, P**., Lee, Y. C., Friedland, C. J., Choi, J. O., & Yang, E. (2020). Multiobjective Optimization of Post-disaster Reconstruction Processes for Ensuring Long-Term Socioeconomic Benefits. *Journal of Management in Engineering*, *36*(4), 04020038.

[7] **Ghannad, P**., Lee, Y. C., & Choi, J. O. (2020). Feasibility and implications of the modular construction approach for rapid post-disaster recovery. *International Journal of Industrialized Construction*, 1(1), 64-75.

[8] Deria, A., **Ghannad, P**., & Lee, Y. C. (2020). Evaluating implications of flood vulnerability factors with respect to income levels for building long-term disaster resilience of low-income communities. *International Journal of Disaster Risk Reduction*, 101608.

[9] Lee, Y. C., Shariatfar, M., **Ghannad, P**., Zhang, J., & Lee, J. K. (2020). Generation of Entity-Based Integrated Model View Definition Modules for the Development of New BIM Data Exchange Standards. *Journal of Computing in Civil Engineering*, *34*(3), 04020011.

[10] **Ghannad, P**., Lee, Y. C., Dimyadi, J., & Solihin, W. (2019). Automated BIM data validation integrating open-standard schema with visual programming language. *Advanced Engineering Informatics*, *40*.

Peer-reviewed Journal Articles (Under Revision/Review/Preparation):

[1] Terreno, S., **Ghannad, P.**, Mahaveen, N., and Podduturi, P., "The Risks to Autonomous Martian Construction Projects: A Systematic Review," Journal of Construction Robotics. Under Review.

[2] Al-Maabreh, O., Hoque, M., Lee, Y.-C., Lee, K., and **Ghannad, P.**, "A Multi-Layered Framework for Automated Validation of Flood Resilience Regulations in Single-Family Dwellings," Journal of Computing in Civil Engineering. Under Review.

Peer-reviewed Conference Proceedings (Published/Accepted):

[1] Ghannad, P., Terreno, S., Podduturi, P., & Mahaveen, N. Systematic Risk Assessment and Quantification for Autonomous Robotic Construction on Mars. In Computing in Civil Engineering 2025: Resilient, Robotic, and Educational Systems (pp. 689-697).

[2] Vaishnavi Jagalur Ramachandra, Naila Mahaveen, Siddharth Banerjee; Pedram Ghannad, Artificial intelligence enabling sustainable construction: a systematic review. Research Congress 2024, Conference Proceedings.

[3] Deria, A., Ghannad, P., Lee, Y. C. Deep Reinforcement Learning-based Optimization for Crew Allocation in Modular Building Prefabrication Construction Research Congress 2024, Conference Proceedings.

[4] O. Al-Maabreh, M. Hoque, Y. Lee, K. Lee and P. Ghannad (2023). Revealing Inherent Rules and Validation Frameworks for Evaluating BIM Data Regarding Disaster- and Resilience-related Regulations. 2023 ASCE International Computing in Civil Engineering (i3CE) Conference, Corvallis, Oregon.

[5] Deria, A., Lee, Y. C., & **Ghannad, P**. Integrating AI in an Audio-based Digital Twin for Autonomous Management of Roadway Construction. Construction Research Congress 2022, Arlington, Virginia.

[6] Deria, A., Lee, Y. C., & **Ghannad, P**. Framework for Measuring Infrastructure Vulnerability and Resiliency of Communities during a Flood Disaster. Construction Research Congress 2022, Arlington, Virginia.

[7] **Ghannad, P**., & Lee, Y. C. (2021, September). Developing an advanced automated modular housing design system using deep learning and Building Information Modeling (BIM). In *ASCE International Conference on Computing in Civil Engineering (i3CE2021).* Orlando, FL.

[8] **Ghannad, P**., & Lee, Y. C. (2020, November). Prioritization of post-disaster reconstruction of transportation network using an integrated AHP and genetic algorithm. In Construction Research Congress 2020: Project Management and Controls, Materials, and Contracts (pp. 464-474). Reston, VA: American Society of Civil Engineers.

[9] Lee, Y. C., **Ghannad, P**., Dimyadi, J., Lee, J. K., Solihin, W., & Zhang, J. (2020, November). A Comparative Analysis of Five Rule-Based Model Checking Platforms. In Construction Research

Congress 2020: Computer Applications (pp. 1127-1136). Reston, VA: American Society of Civil Engineers.

[10] Deria, A., **Ghannad, P**., & Lee, Y. C. (2020, November). Analyzing Vulnerability of Lower Income Communities to Natural Disasters. In Construction Research Congress 2020: Infrastructure Systems and Sustainability (pp. 761-770). Reston, VA: American Society of Civil Engineers.

[11] **Ghannad, P**., Lee, Y. C., & Choi, J. O. (2019). Investigating Stakeholders' Perceptions of Feasibility and Implications of Modular Construction-Based Post-Disaster Reconstruction. Modular and Offsite Construction (MOC) Summit Proceedings, 504-513.

[11] **Ghannad, P**., Lee, Y. C., Friedland, C., & Yang, E. (2019). Optimizing the Socioeconomic Benefit of Post-Disaster Strategies by Prioritizing Reconstruction of Damaged Facilities. In *Computing in Civil Engineering 2019: Smart Cities, Sustainability, and Resilience* (pp. 180-187). Reston, VA: American Society of Civil Engineers.

[12] **Ghannad, P**., Lee, Y. C., Dimyadi, J., & Solihin, W. (2019). Modularized BIM Data Validation Framework Integrating Visual Programming Language with LegalRuleML. In *Advances in Informatics and Computing in Civil and Construction Engineering* (pp. 85-93). Springer, Cham.

[13] Lee, Y. C., **Ghannad, P**., Shariatfar, M., Zhang, J., & Lee, J. K. (2019). Entity-Based MVD Concept Module Generation for Development of New BIM Data Exchange Standards. In *ASCE International Conference on Computing in Civil Engineering 2019: Visualization, Information Modeling, and Simulation, i3CE 2019* (pp. 464-472). American Society of Civil Engineers (ASCE).

[14] Lee, Y. C., **Ghannad, P**., & Lee, J. K. (2019). Reusability and Its Limitations of the Modules of Existing BIM Data Exchange Requirements for New MVDs. In *Advances in Informatics and Computing in Civil and Construction Engineering* (pp. 103-110). Springer, Cham.

[15] Lee, Y. C., **Ghannad, P**., Shang, N., Eastman, C., & Barrett, S. (2018). Graphical scripting approach integrated with speech recognition for BIM-based rule checking. In *Construction Research Congress 2018* (pp. 262-272).

TEACHING AND MENTORSHIP EXPERIENCES

Assistant Professor. (2022-present)

Bradley University, Peoria, IL, USA.

- *Courses*: Computer-aided Design and Drafting (CADD), Building Information Modeling (BIM), Advanced Construction Scheduling, Advanced CADD, Construction Graphics, Soil Mechanics, Heavy/Highway Construction, Construction Project Controls, Mechanics of Materials
- *Tasks:* Curriculum Development and Planning, Delivering Course Content and Laboratory Sessions, Designing Assessments, Examinations, Assignments, and In-Class Activities, Facilitating Workshops on CADD, BIM, and Scheduling Software

Undergraduate mentor. (Spring 2020)

Louisiana State University, Baton Rouge, Louisiana, USA.

- *Tasks*: mentoring undergraduate students for conducting a simple research project. CICI Laboratory.
- *Research topic*: Developing a comprehensive BIM model for LAHouse

Teaching Assistant. (2017-2018)

Louisiana State University, Baton Rouge, Louisiana, USA.

- *Course*: Construction Plan Reading

- *Tasks*: Teaching the lab sessions, preparing online tutorials, designing and grading the exams and assignments, and helping the students with course-related issues.

Adjunct Instructor. (2016-2017)

Payame Noor University, Semnan, Iran.

- *Courses*: Statics, Strength of Material, Engineering Economics

PROFESSIONAL SERVICES

- Faculty Co-Advisor of the Association of General Contractors (AGC) Student Chapter
- Faculty Co-Advisor of Estimating Club, CEC Department, Bradley University
- Member of the Bridge-PAL Program Committee, CEC Department, Bradley University
- Member of Teaching Excellence Committee, CEC Department, Bradley University
- Reviewer for ASCE Journal of Management in Engineering
- Reviewer for ASCE Journal of Computing in Civil Engineering
- Reviewer for ASCE Journal of Construction Engineering and Management
- Reviewer for the International Journal of Industrialized Construction
- Reviewer for Construction Research Congress (CRC 2020/2022/2024), ASCE.
- Reviewer for International Conference on Computing in Civil Engineering (i3CE 2019/2025), ASCE.
- A student assistant in holding the Construction Research Congress (CRC 2018) hosted by the Construction Management Department of Louisiana State University.
- A student supporter providing engineering research experience to K-12 students who participated in the LSU ENGage outreach program.

PROFESSIONAL LICENSURE & MEMBERSHIPS

- LEED Accredited Professional, Building Design + Construction (LEED AP BD+C)
- LEED Green Associate (LEED GA)
- American Society of Civil Engineering (ASCE)
- International Project Management Association
- Non-voting member of ASCE Computing Division's Visualization, Information Modeling, and Simulation (VIMS) Committee.

REFERENCES

[1] **Dr. Yong-Cheol Lee (Ph.D. Advisor and Postdoc Supervisor)**

- Assistant Professor, Department of Construction Management, Louisiana State University, Baton Rouge, LA, 70803, Phone: (225) 578-5483, yclee@lsu.edu

[2] **Dr. Anisha Deria (Collaborator)**

- Assistant Teaching Professor, Department of Civil, Construction and Environmental Engineering, University of Alabama, Tuscaloosa, AL, 35487, Phone: (205) 348-2478, aderia@ua.edu

[3] **Dr. Siddhart Banerjee, (Collaborator)**

- Assistant Professor, Department of Civil Engineering, Calpoly, Pomona, CA, Phone: 909-869-4863, siddharthb@cpp.edu

[4] **Dr. Jin Ouk Choi (Collaborator)**

- Associate Professor, Department of Civil & Environmental Engineering & Construction, University of Nevada, Las Vegas, Phone: (702) 895-4515, jinouk.choi@unlv.edu