HISHAM M. SAID, Ph.D., Assoc. DBIA

Associate Professor
Department of Civil, Environmental, and Sustainable Engineering
School of Engineering
Santa Clara University
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EDUCATION

Doctorate of Philosophy, Civil and Environmental Engineering,
University of Illinois at Urbana-Champaign, Illinois
Major: Construction Management GPA = 4.0/4.0
August 2006 – August 2010
Dissertation title: "*Optimizing Site Layout and Material Logistics Planning during the Construction of Critical Infrastructure Projects*"
Dissertation Advisor: Prof. Khaled El-Rayes

Master of Science, Structural Engineering,
Cairo University, Giza, Egypt
Major: Construction Engineering and Management GPA = 3.95/4.0
August 2003 – May 2006
Dissertation title: "*A Framework for Planning and Optimizing Bridge Deck Construction Using Computer Simulation*"
Dissertation Advisors: Prof. Mohamed Marzouk, Prof. Moheeb El-Said

Bachelor of Science, Structural Engineering,
Cairo University, Giza, Egypt
August 1998 – May 2003, GPA = 3.85/4.0, ranked 6th out of 480.

RESEARCH INTERESTS

- Construction Industrialization
- Spatial Scheduling and Location-based Management
- Generative Design and Virtual Construction
- Construction Unionization Dynamics
- Construction Processes Modeling and Optimization

PUBLICATIONS

Journal Papers

1. **Said H.**, Mali A., and Deshmukh A. (2021). "Identification and Assessment of the Unionization Factors of the U.S. Electrical Construction Trade." *Engineering, Construction and Architectural Management, https://doi.org/10.1108/ECAM-12-2020-1062.*
2. **Said H.** and Reginato J. (2018). "Impact of Design Changes on Virtual Design/Construction (VDC) Performance for Electrical Contractors." *Journal of Construction Engineering and Management*, ASCE, 144(1), DOI: 10.1061/(ASCE)CO.1943-7862.0001417.
3. **Said H.** and Bartusiak J. (2018). "Regional Competition Analysis of Industrialized Homebuilding Industry." *Journal of Construction Engineering and Management*, ASCE, 144(2), DOI: 10.1061/(ASCE)CO.1943-7862.0001424.
4. **Said H.** and Kandimalla P. (2017). "Performance Measurement of Sheet Metal Ductwork Fabrication under Batch Production Settings." *Journal of Construction Engineering and Management*, ASCE, 144(2), DOI: 10.1061/(ASCE)CO.1943-7862.0001423.
5. **Said H.**, Chalasani T. and Logan S. (2017). "Exterior Prefabricated Panelized Walls Platform Optimization." *Automation in Construction*, Elsevier, 76, 1 - 13.
6. **Said H.** and Lucko G. (2016). "Float Types in Construction Spatial Scheduling." *Journal of Construction Engineering and Management*, ASCE, 10.1061/(ASCE)CO.1943-7862.0001202 , 04016077.
7. **Said H.** (2015). "Modeling and Likelihood Prediction of Prefabrication Feasibility for Electrical Construction Firms." *Journal of Construction Engineering and Management*, 10.1061/(ASCE)CO.1943-7862.0001051 , 04015071.
8. **Said H.** (2015). "Prefabrication Best Practices and Improvement Opportunities for Electrical Construction." *Journal of Construction Engineering and Management,* ASCE, ISSN 0733-9364/04015045(14).
9. Lucko G., **Said H.**, and Bouferguene A. (2014). "Construction Spatial Modeling and Scheduling with Three-Dimensional Singularity Functions." *Automation in Construction*, Elsevier, *43(7), 132 - 143*.
10. **Said H.**, Nicoletti T, Perez-Hernandez P., and Heath S. (2014). "Utilizing Telematics Data to Support Effective Equipment Fleet Management Decisions." *Journal of Computing in Civil Engineering,* ASCE, DOI: 10.1061/(ASCE)CP.1943-5487.0000444..
11. **Said H.** El-Rayes K. (2014). "Automated Multi-objective Construction Logistics Optimization System (AMCLOS)." *Automation in Construction*, Elsevier, *43(7), 110 - 122*.
12. **Said H.**, and Berger L. (2014). "Future Trends of Sustainability Design and Analysis in Construction Industry and Academia." *Practice Periodical on Structural Design and Construction*, ASCE, 19(1), 77 – 88.
13. **Said, H.**, Kandil, A., Nookala, S., Cai, H., El-Gafy, M., Senouci, A., and Al-Derham, H. (2014). "Modeling of the Sustainability Goal and Objective Setting Process in the Predesign Phase of Green Institutional Building Projects." *Journal of Architectural Engineering*, ASCE, 20(2), 04013007.
14. Jeerangsuwan, T., **Said H.**, Kandil A., and Ukkusuri S. (2013). "Financial Evaluation for Toll Road Projects Considering Traffic Volume and Serviceability Interactions." *Journal of Infrastructure Systems*, ASCE, June 2013.
15. **Said H.,** El-Rayes K. (2013). " Performance of Global Optimization Models for Dynamic Site Layout Planning of Construction Projects." *Automation in Construction, Elsevier*, Elsevier, 36, 71 – 78.
16. **Said H.,** El-Rayes K. (2013). " Optimal Utilization of Interior Building Spaces for Material Procurement and Storage in Congested Construction Sites." *Automation in Construction, Elsevier*, 31, 292–306.
17. Su X., Cai H., **Said H.**, and Kandil A. (2012). "GIS-Based Dynamic Construction Site Material Layout Evaluation for Building Renovation Projects Automation in Construction." *Automation in Construction, Elsevier*, 27, 40 – 49.

18. **Said H.,** El-Rayes K. (2010). "Optimizing Material Procurement and Storage on Construction Sites." Construction Engineering and Management, ASCE, 137(6), 421 – 431.
19. **Said H.,** El-Rayes K. (2010). "Optimizing the Planning of Construction Site Security for Critical Infrastructure Systems." *Automation in Construction*, Elsevier, 19(2), 221 - 234.
20. El-Rayes K., Said **H.** (2009). "Dynamic Site Layout Planning using Approximate Dynamic Programming." *Journal of Computing in Civil Engineering,* ASCE, 23(2), 119 - 127.
21. **Said H.**, Marzouk M., and El-Said M. (2009) "Application of Computer Simulation to Bridge Deck Construction: Case Study." *Automation in Construction, Elsevier, 18(4), 377 - 385*.
22. Marzouk M., **Said H.**, and El-Said M. (2009) "Framework for multiobjective optimization of launching girder bridges." *Construction Engineering and Management,* ASCE, 135(8), 791 – 800.
23. Marzouk M., **Said H.,** and El-Said M. (2008). "Special Purpose Simulation Model for Balanced Cantilever Bridges." *Journal of Bridge Engineering*, ASCE, 13(2), 122-131.

Conference Papers and Refereed Presentations

1. Kim, J., Bezrukova, K., Loyd, D., Spell, C.S. & **Said, H.** (2022). "No pain, no (ethical) gain? Faultlines, ethical decisions, and group cohesion." Proceedings of the International Association for Conflict Management (IACM) Conference, July 10-13, 2022, Ottawa, Canada.
2. Kim, J., Bezrukova, K., Loyd, D., Spell, C.S. & **Said, H.** (2020). No pain, no (ethical) gain? Faultlines, ethical decisions, and group cohesion. Symposium on "Ethics in Organizations: Leveraging Organizational Practices to Promote Ethics," the 80th Academy of Management Conference.
3. **Said H.** and Mali A. (2020). "Market Share Metrics and Data Analysis of the U.S. Union Electrical Construction Industry." 56th ASC International Conference, Liverpool, U.K.
4. **Said H.** and Deshmukh A. (2020). "Data-driven Assessment of Market Share Growth Factors of Union Electrical Contractors in the U.S." 56th ASC International Conference, Liverpool, U.K.
5. **Said H.** and Reginato J. (2018). "Planning and Control Framework for Virtual Design and Construction: Case-based Evidence from Electrical Construction." Construction Research Congress (CRC), American Society of Civil Engineers (ASCE), April 2 – 4, New Orleans, Lousiana.
6. Reginato J. and **Said H.** (2018). "The Impact of BIM Design-related Changes on the Performance of VDC Tasks of Electrical Contractors in the United States." Construction Research Congress (CRC), American Society of Civil Engineers (ASCE), April 2 – 4, New Orleans, Lousiana.
7. Bartusiak J. and **Said H.** (2018). "Post-Disaster Interim Shelter using Manufactured Housing Units: Analysis of Systems and Supply in the United States." Construction Research Congress (CRC), American Society of Civil Engineers (ASCE), April 2 – 4, New Orleans, Lousiana.
8. Kim, J., Bezrukova, K., Wang, E., Loyd, D., Spell, C.S. & **Said, H.** (2018). Checked and Balanced: The Role of Group Faultlines in Ethical Decision Making. Annual Conference of the Association for Practical and Professional Ethics. Chicago, IL.
9. Kim, J., Bezrukova, K., Wang, E., Loyd, D., Spell, C.S. & **Said, H.** (2017). "Checked and Balanced: The Role of Group Faultlines in Ethical Decision Making." Midwest Academy of Management Conference. Chicago, IL.
10. Kim, J., Bezrukova, K., Wang, E., Loyd, D., Spell, C.S. & **Said, H.** (2017). Checked and Balanced: The Role of Group Faultlines in Ethical Decision Making. Interdisciplinary Network for Group Research conference. St. Louis, MO.
11. **Said H.** and Bartusiak J. (2016). "Detailed Analysis of Texas's Manufactured Housing Growth and Competition." Modular Construction Summit (MOC), Edmonton, Alberta Sept 29 – Oct 1.
12. Daneshgari P, Moore H. and **Said H.** (2016). "Measuring and Tracking Externalized Work to Support Industrialized Construction." Modular Construction Summit, Edmonton, Alberta Sept 29 – Oct 1.
13. **Said H.**, Chalasani T. and Logan S. (2016). "Modeling and Optimizing the Efficiency-Variety Tradeoff of Customized Prefabricated Panelized Exterior Walls." Construction Research Congress, American

Society of Civil Engineers (ASCE), May 31 – June 2, San Juan, Puerto Rico.

14. **Said H.**, Ngo V.Y. and Bezrukova y. (2016). "Introducing Civil Engineering Students to Ethical Infrastructure Development: Toll Road Design Exercise." Construction Research Congress, American Society of Civil Engineers (ASCE), May 31 – June 2, San Juan, Puerto Rico.
15. **Said H.** (2015). "Predictive Modeling of Prefabrication Feasibility for the United States Electrical Contracting Firms". 5th Construction Specialty Conference, Canadian Society of Civil Engineers, Vancouver, BC, Canada.
16. **Said H.** and Lucko G. (2015). "Construction Space Float Definition, Quantification, and Analysis". 5th Construction Specialty Conference, Canadian Society of Civil Engineers, Vancouver, BC, Canada.
17. **Said H.** and Nicoletti T. (2015). "Telematics Data-Driven Prognostics System for Construction Heavy Equipment Health Monitoring and Assessment." 5th Construction Specialty Conference, Canadian Society of Civil Engineers, Vancouver, BC, Canada.
18. Ngo, Vy J., **Said, H.** & Bezrukova, K. (2015). Splits to keep it honest! How faultlines influence ethical and technical performance of civil engineering teams. Interdisciplinary Network for Group Research conference. Pittsburgh, PA.
19. **Said H.**, Ali, A. R., and Alshehri M. (2014). "Analysis of the Growth Dynamics and Structure of Modular Building Construction Industry." Construction Research Congress, Atlanta, GA, May 19-21.
20. Lucko G., **Said H.**, and Bouferguene A. (2014). "Spatially-Constrained Scheduling with Multi-Directional Singularity Functions." Construction Research Congress, Atlanta, GA, May 19-21.
21. **Said H.** and El-Rayes K (2013). "Automated System for Multi-Objective Optimization of Construction Supply and Site Logistics". 4th Construction Specialty Conference, Canadian Society of Civil Engineers, Montréal, Canada.
22. Jeerangsuwan, T., Kandil, A., **Said H.**, Ukkusuri, S. (2012). "Financial Viability Evaluation for A Toll Road Project Considering Serviceability." Third International Conference on Construction in Developing Countries (ICCIDC–III), July 4-6, 2012 Bangkok, Thailand.
23. **Said H.**, and El-Rayes. K. (2012). "Optimal Material Logistics Planning in Congested Construction Sites." Construction Research Congress, American Society of Civil Engineers, May 21 - 23, West Lafayette, IN.
24. **Said H.**, Kandil, A., and Cai, H. (2012). "Agent-Based Simulation of Labor Emergency Evacuation in High-Rise Building Construction Sites." Construction Research Congress, American Society of Civil Engineers, May 21 - 23, West Lafayette, IN.
25. Jeerangsuwan T., **Said H.**, Kandil, A., Ukkusuri, S. (2012). "Optimization Application for Financial Viability Evaluation of PPP Toll Road Projects." Construction Research Congress, American Society of Civil Engineer, May 21 - 23, West Lafayette, IN.
26. Nookala S., **Said H.**, Kandil, A., Cai, H., Al-Derham, H., Senouci, A. and El-Gafy, M. (2012). "Developing a Framework for Pre-Design Process Simulation for Green Buildings." Construction Research Congress, American Society of Civil Engineers, May 21-23, W. Lafayette, IN.
27. Nookala S., **Said H.**, Kandil A., Cai H., Al-Derham H., Senouci A., and El-Gafy M. (2011). "Simulation Framework for Pre-Design Process of Green Buildings." Proceedings of the 2011 Winter Simulation Conference, INFORMS Simulation Society, 11-14 Dec. 20111, Phoenix, AZ.
28. Nookala S., **Said H.**, Kandil A, and Cai H. (2011). "Conceptual Agent Based Framework for Construction Stakeholder Interactions in Sustainable Building Projects." 3rd International/9th Construction Specialty Conference, Canadian Society of Civil Engineers, Ottawa, Ontario, Canada.
29. Jeerangsuwan T., **Said H.**, and Kandil A. (2011). "Financial Viability Evaluation for Toll Road Projects Considering the Dynamics between Road Condition and Travel Demand." International Construction Specialty Conference, Canadian Society of Civil Engineers, Ottawa, Ontario, Canada.
30. **Said H.**, and El-Rayes K. (2010). "Optimizing Material Logistics Planning in Construction Projects." Construction Research Congress, American Society of Civil Engineers, Banff, Alberta, Canada.
31. El-Rayes K., **Said H.** (2009) "Global Optimization of Dynamic Site Layout Planning in Construction Projects." Construction Research Congress, American Society of Civil Engineers, Seattle, WA, USA.

32. **Said H.**, Marzouk M., and Elsaid M. (2006) "On the Use of Ant Colony to Optimize Launch Girder Bridges." International Conference on Bridge Management Systems – Monitoring, Assessment and Rehabilitation, Housing and Building National Research Center (HBRC), Cairo, Egypt. Marzouk M.,
33. **Said H.**, Elsaid M. (2006) "Bridge_Sim: Framework for Planning and Optimizing Bridge Deck Construction Using Computer Simulation." Proceedings of the 2006 Winter Simulation Conference, Monterey, CA, USA.

RESEARCH PROJECTS

Santa Clara University, Department of Civil Engineering, Santa Clara, CA
*Assistant Professor***,** 01/2012 – 09/2018; ***Associate Professor***, 09/2018 – Present

- ***PROJECT: - Data-Driven Strategies to Increase Market Share of Union Inside Electrical Contractors (2019) - $ 41,255 – ELECTRI International***. The goal of this study is to provide a better understanding of union electrical contracting market share determinants and dynamics that is based on reliable local market data collection, rigorous data analysis, and bottom-up strategy formulation approach. The study will support the National Electrical Contractors Association (NECA) and the International Brotherhood of Electrical Workers (IBEW) to draft and implement national strategies for union market share growth, which will be orchestrated with localized chapter strategies and member operational practices that are tailored for their individual market and industry conditions.

- ***PROJECT: - Smart Building and IoT Impact on Electrical Contracting (2018) - $ 35,741 – ELECTRI International***. The main goal of this study is to develop short and long-term strategies for the electrical construction industry to prepare for the new era of smart facilities. This main goal implies achieving 3 interrelated objectives. First, the study will construct a detailed taxonomy of current and potential smart building functionalities, technologies, and their interdependencies. Second, new business, income generation, and contractual models will be identified so ECs can take advantage of the growing market of smart facilities. Third, the study will suggest new labor development strategies for NECA and IBEW to train the future workforce with the required skills for the new market.

- ***PROJECT: Identifying BIM-Related Costs due to Changes (2016) - $60,380 – ELECTRI International***. The main goal of this study is to support NECA members in apprising owners, architects and general contractors about the importance of the optimal sequencing of a BIM Execution Plan and the true cost impacts of making changes to a BIM model. This main goal requires achieving three main objectives: 1) capturing the current industry experience of developing BIM models and performing its related planning tasks under design changes; 2) developing best practices to capture, categorize, quantify and communicate the cost impact of BIM changes in an organized, concise, uniform manner; 3) disseminate the outcome of this study to NECA members and the broader construction industry. (Co-PI: Justin Reginato, California State University, Sacramento)

- ***PROJECT: Tracking Process for Flexible Prefabrication of Customized Building Assemblies (2016) - $10,380 – MCA Inc***. The objective of this proposal is to develop a tracking process for flexible production operations of prefabricated building products and assemblies. A product family architecture approach is utilized to track and monitor the productivity of fabricating building prefabricated assemblies. This architecture-based tracking process will enable the accurate assessment of throughput times against possible design variations in the structure and component types of the prefabricated assemblies.

- ***PROJECT: Flexible and Reconfigurable Manufacturing Systems for Buildings Modular Construction and Prefabrication (2014/2015) - $10,000 – Santa Clara University School of Engineering***. The goal of the proposed study is to investigate and develop new flexible and configurable manufacturing systems that would help modular building contractors to optimize their operations design

flexibility. This developed system will be designed with three main objectives: 1) increase building design variety while maintaining acceptable level standardization and productivity gains; 2) improve the agility of the fabrication facility to effectively adjust for provided flexible building designs; and 3) support the contractor and project owner with needed technologies and decision-support tools to quantify and optimize modularization benefits and costs.

- ***PROJECT: Impact of Group Composition and Faultines on Ethical and Technical Performance in Civil Engineering Projects. (2013/2014) - $1,000 – SCU Markkula Center for Applied Ethics***. The goal of the proposed study is to investigate the impact of group/team composition on its ethical and technical performance outcomes in civil infrastructure projects. The study is envisioned to achieve three sub-objectives: 1) model major diversity attributes that can exist in an infrastructure project team; 2) quantify the interrelations between team composition, realized technical performance, and compliance with ethical standards; and 3) develop a teaching module for civil engineering students to identify and practice ethical engineering practices.

- ***PROJECT: Industrialization of Electrical Contracting: Supply Chain and Logistics Management (2013/2014) - $7,000 – Early Career Award – ELECTRI International***. This project was supported by ELECTRI International to investigate and document the best practices of supply chain and logistics management performed by the electrical contractors to industrialize and improve the efficiency of the industry. The project work involved surveying electrical contractors, suppliers, and manufacturers to identify current industrialization practices and their benefits to whole supply chain.

- ***PROJECT: Use of Telematics Data to Perform Informative Decisions of Improving Heavy Equipment Fleet Utilization (2013) - $19,000 – Santa Clara University School of Engineering***. The objective of this project was to investigate the use of Telematics technology and data to analyze the utilization of heavy construction equipment and improve the fleet operational and financial efficiency. The telematics data of an equipment rental house were used to develop and validate new computational algorithms for utilization assessment of fleet assets, equipment prognostics, and equipment emissions reporting. The research project received kind support of DPL America in the form of telematics technology access and training.

ETH Zurich, Department of Civil Engineering, Zurich, Switzerland
Visiting Professor, 01/2022 – 06/2022

- ***PROJECT: - 7DayHouse: Fabrication-aware Design – Swiss National Science Foundation***. This project envisions the manufacturing and assembly of a prefabricated fully-customized roof-extension house that can be customized and designed in a one day, and then can be delivered in six days. The project's goal is to create a fabrication-aware generative design tool that can create and iterate the customized design of the house within the first day, by combining AI-powered generative design technologies with industrialized mass customized methodologies. The design tool will consider the house design requirement and production constraints to create an adaptive "kit-of-parts" library that will be configured with real-time customer input in an augmented reality environment.

Purdue University, School of Civil Engineering, West Lafayette, IN
Post-Doctoral Research Associate, 09/2010 – 07/2011

- ***PROJECT: Impact of Environmental Policies on the Construction Industry in Qatar*** *(Fall 2010 – Summer 2013), Purdue University*. The objective of this project is to develop a simulation based framework for evaluating the impact of environmental policies on the construction industry in Qatar. This research project involves three main tasks: (1) evaluate the extent of the adoption environmental policies in Qatar; (2) develop an agent-based simulation framework of the construction industry in Qatar that gauges the benefits and challenges associated with different levels of adoption of environmental policies; and (3) evaluate the framework using analyses of construction projects both in Qatar and the United States. This research is financially supported by Qatar National Research Fund (QNRF).

University of Illinois at Urbana-Champaign, Department of Civil & Environmental Engineering, Champaign, IL

Graduate Research Assistant, 08/2006 – 08/2010

- ***PROJECT: Optimizing Construction Logistics Planning for Critical Infrastructure Projects*** *(Fall 2006 – Summer 2010), University of Illinois at Urbana-Champaign*. The objectives of this doctoral research project are to: 1) develop global optimization models of dynamic site layout planning; 2) develop a construction logistics planning and optimization model that integrates the decision of materials inventory and site layout planning; 3) formulate new metrics of evaluating the impact of site layout planning on the security level of critical infrastructure construction sites; and 4) develop a multi- objective optimization model that is capable of generating optimal tradeoffs between minimizing site security risks and minimizing site overall cost. This research was financially supported in-part by NSF project number 0626066.
- ***PROJECT: Studying & Minimizing Traffic Related Work Zone Crashes in Illinois*** *(Fall 2006 – Fall 2010), University of Illinois at Urbana-Champaign*. This research project studied and answered a number of important and challenging research questions, including: (1) What are the probable causes of work zone crashes in Illinois? (2) What are the probable work zone layout factors, if any, that contribute to an increase in traffic-related crashes? (3) How can work zone layouts and merge techniques be improved to minimize and control the probable causes of work zone crashes in Illinois? (4) How practical is the proposed ICHSP strategy of adding temporary rumble strips within and prior to work zones and how effective is it in enhancing work zone safety?
- ***PROJECT: Nighttime Construction: Evaluation of Lighting Glare for Highway Construction in Illinois*** *(Fall 2006 – January 2008), University of Illinois at Urbana-Champaign*. This $218,680 project was sponsored by the Illinois Department of Transportation (IDOT) to: 1) evaluate the impact of lighting parameters on glare; and 2) provide practical recommendations to reduce and control lighting glare in and around nighttime work zones.
- ***PROPOSAL: Optimizing the Planning and Visualization of Security Arrangements on the Construction Sites of Critical Civil Infrastructure Systems (2010).*** PI: Khaled El-Rayes.
- ***PROPOSAL: Evaluating The Compatibility, Durability And Visibility Of Pavement Markings On Portland Cement Concrete And Various Asphalt Surfaces (2009).*** PI: Khaled El-Rayes and Co-PI: Liang Liu..
- ***PROPOSAL: Clearview Font in Traffic Signs: Assessing IDOT Experiences and Needs (2009)***. PI: Khaled El-Rayes and Co-PI: Liang Liu..
- ***PROPOSAL: Resource Allocation Framework to Meet Highway Asset Preservation Needs (2009)***. PI: Khaled El-Rayes.
- ***PROPOSAL: Optimizing the Measurement and Improvements of Roadway Lighting Performance in Qatar (2008)***. PI: Khaled El- Rayes.

Cairo University, Structural Engineering Department, Cairo, Egypt

Graduate Research Assistant, 08/2003 – 07/2006

- ***PROJECT: Planning and Optimization of Bridge Deck Construction*** *(Fall 2003 – Summer 2006)* Cairo University, Egypt. The objectives of this Master's research project is to: 1) investigate and study bridge deck construction methods known in the Egyptian construction industry; 2) develop special- purpose simulation models for each of the investigated construction methods; 3) develop a multi- objective optimization model to perform time-cost tradeoff optimization bridge deck construction using launching girder technique; and 4) develop a planning framework of bridge deck construction projects. This project won the 2008 award of distinguished post-graduate projects present by Center for Advancement of Post-Graduate Studies and Research in Engineering Sciences (CAPSCU).

INVITED TALKS AND GUEST LECTURES

- ***Cross Laminated Timber (CLT) Construction: Longitudinal Analysis of Project Collaboration Networks and Building Innovation.*** Invited guest talk, Chair of Innovative and Industrial Construction, Institute of Construction & Infrastructure Management, ETH Zurich, 3/14/2022.
- ***Electrical Contractors as Master Integrators for Smart Buildings: to be or not to be?*** Invited workshop, National Electrical Contractors Association (NECA), NECA Convention, Las Vegas, NV, 9/14/2019.
- ***How Electrical Contractors Can Win with the IoT Revolution***. Invited webinar speaker, Graybar and ELECTRI International, 3/26/2019.
- ***Prefab Shops: Flow before Automation***. Invited workshop, National Electrical Contractors Association (NECA), NECA Convention, Seattle, WA, 10/8/2017.
- ***Innovations for Running a Fabrication Workshop: Flow First, Automation Second!*** Invited workshop, Multi-trade Prefabrication Conference, Dallas, TX, 1/30/2017.
- ***BIM in no-Utopia: How Design Changes Deteriorate BIM Efficiencies, and How to Manage BIM Costs!*** Webinar, National Electrical Contractors Association (NECA), NECA Research and Education Foundation, 12/13/2016.
- ***How to leverage Prefab? Supply Chain Management and Concurrent Engineering***. Invited lecture, American Society of Professional Engineers (ASPE), Chapter 55 Monthly Meeting, Santa Clara, CA 12/7/2015.
- ***Sustainable Infrastructure Development: Optimal Public-Private Partnership for Highway Projects***. Invited lecture, American Society of Civil Engineers (ASCE), San Francisco Bay Area Division, San Jose, CA 10/9/2013.

TEACHING EXPERIENCE

Santa Clara University, Department of Civil Engineering, Santa Clara, CA
Assistant Professor, 01/2012 - present

- ***Sole Instructor: CEN288 Engineering Decision and Risk Analysis***. Decision analysis techniques in engineering problems, multi-attribute utility theory, Analytical Hierarchy Process, engineering design/decisions optimization, Linear Programing, Genetic Algorithms, Fuzzy Sets theory, System Dynamics, Decision Trees, Sensitivity Analysis, Monte-Carlo simulation, Group project on engineering decision analysis and optimization.
- ***Sole Instructor: CEN192A Civil Engineering Project Development***. Introduction to problem-solving methodology for the design of civil engineering projects, systems, and/or processes. Selection of Capstone Design Project, project definition, design thinking, design project management, professional ethics.
- ***Sole Instructor: CEN128/208 Engineering Economics and Business***. Time value of money, Economic analysis of engineering projects, planning and capital budgeting, rate-of-return analysis, depreciation, cash-flow analysis, business forms, organizational structures, financial statements, financial analysis.
- ***Sole Instructor: CEN184/284 Construction Project Delivery***. Project stakeholders, preconstruction operations, project reports and records, electronic project administration (Procore), labor laws, safety, meetings and negotiations, risk and liability sharing, payments and change orders, project closeouts, claims and disputes.
- ***Sole Instructor: CEN186/286 Construction Planning and Control***. Work breakdown structure; work sequencing; duration estimates; schedule networks; CPM; resources loading, allocation, and leveling; planning of repetitive tasks; cost estimates; time-cost tradeoffs; cash flow analysis; and, time-cost control, Lab session where student groups use commercial scheduling and takeoff software packages for a construction case project.
- ***Sole Instructor: CEN187/287 Construction Operation and Equipment***. Earthmoving with dozers, scrappers, excavators and hauling trucks. Piling, lifting, concrete operations, asphalt paving, equipment economics, design and control of construction operations, operations planning using computer discrete-event simulation.
- ***Sole Instructor: CEN41 Engineering Mechanics - Statics*** *(Fall)*. Resolution/composition of force systems and their equilibrium. Distributed forces. Friction. Moments of inertia.
- ***Sole Instructor: CEN43 Strength of Materials***. Analysis of stresses and strains in machines and structural members. Study of the behavior of statically determinate and indeterminate structural members subject to axial,

torsional, flexural, shear, and combined loadings. Introduction to the stability of columns.

- ***Training – Association of College and University Educators (ACUE)*** (Summer 2020): In response to COVID-19, I completed two courses on "Promoting Active Learning Online" and "Designing Student Centered Courses."
- ***Training – MEAC Faculty Boot Camp*** (June 2016): participated in the 3-day workshop in Lenexa, KS, offered by MCERF and NECA to train faculty to teach mechanical and electrical systems construction.
- ***Training – ASEE NETI-2*** (October 2012): participated in the 2-day workshop of ASEE's Advanced National Effective Teaching Institute that was held in Seattle October 2012.
- ***Training – ASCE ExCEEd Fellow*** (June 2012): participated in the 4-day workshop of ASCE's ExCEEd (Excellence in Civil Engineering Education) that was held at Florida Gulf Coast University, Fort Meyers, FL.

Cairo University, Structural Engineering Department, Cairo, Egypt
Lecturer, 08/2011 – 12/2011

- ***Co-Instructor: STRN224 Construction Management***. Intro to construction projects, project delivery methods, project planning, scheduling, construction resources, design of construction operations.
- ***Co-Instructor: STRN325 Construction Equipments***. Overview of construction equipments, management of typical equipments used in different construction processes: excavating, earthmoving, hauling, lifting, compacting, piling and asphalt paving, equipment economical aspects.
- ***Co-Instructor: STR 661 Application of Artificial Intelligence in Construction Management.*** . Computer simulation, system dynamics, case-based reasoning, expert systems.
- ***Training:*** 8 certificates from ***Faculty and Leadership Development Center***, 9/2011.

Nile University, Construction Engineering and Management Program, Giza, Egypt
Adjunct Lecturer, Fall 2011

- ***Sole Instructor: CEM 673 Computer Simulation of Construction Operations and Systems***. Condensed one-month course: construction operations planning, computer simulation, discrete-event simulation, simulation model development process, system dynamics, causal loop diagrams, stock and flow diagram.

Purdue University, School of Civil Engineering, West Lafayette, IN
Post-Doctoral Research Associate, 09/2010 – 07/2011

- ***Co-Instructor: CE 521 Construction Business Management***. Construction supply chain, financial aspects of supply chain, demand management, inventory control.
- ***Undergraduate Students Advising:*** 2 students in an independent study on lean construction.

University of Illinois at Urbana-Champaign, Department of Civil & Environmental Engineering, Champaign, IL
Graduate Teaching Assistant, 08/2006 – 08/2010

- ***Teaching Assistant: CEE421 Construction Planning***. Work breakdown structure, activity duration estimation, scheduling, resource allocation, resource leveling, linear scheduling, repetitive construction, time-cost tradeoff, cash flow analysis, integrated time-cost control, value engineering.
- ***Certificate*** **in Foundations of Teaching**, University of Illinois at Urbana-Champaign, May 2010. The Certificate in Foundations of Teaching is a program offered by the Center for Teaching Excellence (CTE) in UIUC to provide an opportunity for graduate students to explore teaching and to help them prepare for future responsibilities in an academic setting.
- ***Graduate*** **Teacher Certificate,** University of Illinois at Urbana-Champaign, May 2010. The Graduate Teacher Certificate is a program offered by the Center for Teaching Excellence (CTE) in UIUC that is designed to encourage TAs to develop their teaching skills and reflective practice. It provides opportunities to document teaching experience, professional development, and the constructive use of student feedback.

Cairo University, Structural Engineering Department, Cairo, Egypt
Graduate Assistant, 08/2003 – 07/2006

- ***Teaching Assistant: STR404 Cost Estimation and Control*** *(Fall 2003 - 2006)*. (UnderGrad course)
- ***Teaching Assistant: STR480 Construction Engineering Senior Graduation Project*** *(Fall 2003 - 2006)*. (UnderGrad)
- ***Teaching Assistant: STR208 Construction Planning and Control*** *(Fall 2003 - 2006)*. (UnderGrad)
- ***Teaching Assistant: CVE301 Engineering Economics*** *(Fall 2003 - 2006)*. (UnderGrad)
- ***Training:*** 4 certificates from ***Faculty and Leadership Development Center***, 5/2006.

PROFESSIONAL EXPERIENCE

- **Associate DBIA Professional**, the Design Build Institute of America, USA. 2020.
- **Research Commercialization Training Certificates**, the National Council of Entrepreneurial Tech Transfer (NCET2), USA. 2013.
  - Certificate 1 – Research Commercialization Introductory Course
  - Certificate 2 – Understanding Patents and Patent Application Process for Engineers and Scientists
- **Faculty Resident**, Blach Construction Co. (BCC), Santa Clara, CA, USA. 06/2013 – 09/2013.
  - Project Engineer: middle school cafeteria project, responsible for: RFIs, submittals, safety reports, As-Built drawings, updated project schedules, and value engineering.
  - Estimator: worked in the main office to perform quantity takeoffs and estimates of school and community building construction projects. Utilization of On-Screen Takeoff and Timberline Estimator software.
- **Program Academic Director and Instructor**, Executive Development Center, Santa Clara University. 12/2012 – 6/2013
  Planned and designed a training program for Abengoa project and construction professionals based on PMI certification and curriculum.
- **Trainer**, Institute for Construction Engineering, Management, and Technology (ICEMT), the Arab Contractors, Cairo, Egypt. 10/2011
  Prepared and delivered the material for a training workshop titled "Construction Site Layout Planning"
- **Contract Administrator**, Arab Consulting Engineers (ACE), Cairo, Egypt. 01/2005 – 05/2005
  Project: City Stars Malls and Hotels, Heliopolis.
  Responsible for preparing bidding documents, searching for candidate bidders, evaluating bidders, initiation of contracts, and following up on the status of the contracts.
- **Junior Structural Designer**, COSMOSE Consultants, Cairo, Egypt. 09/2003 – 09/2004
  Responsible for accomplishing steel and concrete design using either ECP or BSC and was involved in the following projects:
  - *Kuwait Villas*, Kuwait: Concrete design for different villas in Kuwait.
  - *San-Stifano Hotel*, Alex, Egypt: contractor consultant, checking of design and drawing, and deciding on the construction method for the upper steel bridge floors between the two towers.
  - *Ali Saleh Mosque* – Yemen: As a contractor consultant, office was responsible for design and drawing checking, and design of false-work shuttering.
- **Structural Designer**, AAW Consultants, Cairo, Egypt. (Intern), Summer 2002
  Assisting in the design of concrete buildings, ground tanks, and elevated tanks, in different water reclamation plants in Egypt.
- **Site Engineer**, WEIR WESTGARTH Contractors, Muscat, Oman. (Intern), Summer 2001
  Assisting in site supervision in the construction of the 2nd phase of Al-Ghubra power station. Involved in the supervision of pile construction, pile testing, and generating construction monthly reports.

AWARDS AND HONORS

- **Senior Fellow, Collegium Helveticum** (Spring 2022)
  Merit-based membership for established scientists and artists who contribute to the Collegium Helveticum community as part of an academic stay at ETHZ, UZH or ZHdK.
- **Teaching Excellence Award, SCU School of Engineering** (Winter 2019)
  Merit-based and nomination based award to an engineering faculty with proven record of productive research.
- **Researcher of the Year, SCU School of Engineering** (Winter 2017)
  Merit-based and nomination based award to an engineering faculty with proven record of productive research.
- **Outstanding Reviewer Award, ASCE Journal of Computing in Civil Engineering** (Winter 2017)
  Award granted by the journal to the reviewers with the most thoroughness and helpfulness of their reviews.
- **Early Career Award, ELECTRI International** (Spring 2013),
  Award research topic: Industrialization of Electrical Contracting: Supply Chain and Logistics Management.
- **Best Paper Award, Construction Research Congress 2012** (Fall 2012),
  Paper "Optimal Material Logistics Planning in Congested Construction Sites", Construction Research Congress, Purdue University, West Lafayette, IN.
- **ASCE ExCEEd Fellowship** (Spring 2012),
  ASCE merit-based scholarship to attend Excellence in Civil Engineering Education (ExCEEd) workshop in Fort Meyers, FL June 2012.
- **Eminent Engineer Honor** (Fall 2012),
  Honorary membership in the Order of the Engineer organization bestowed on "Special engineers, who by reason of education, eminence or experience, are deemed worthy of the Order."
- **UIUC Teaching/Research Assistantship and Tuition Scholarship** (2006-2010).
  University of Illinois at Urbana-Champaign, IL, USA.
- **AAAEA Student Scholarship** (2008 and 2009). Awarded annually to distinguished Undergraduate or Graduate, Engineer, Architect, Computer Science student who is also a student member of AAAEA.
- **CAPSCU Prize for Distinguished Post-graduates** (2008). Awarded annually by the Center for Advancement of Post-Graduate Studies and Research in Engineering Sciences (CAPSCU) at the Faculty of Engineering, Cairo University to three distinguished post-graduate students. The decision is made on the basis of quality of research work and the publications produced by the thesis.
- **Cairo University Excellence Award** (2003). Presented by Cairo University to the most distinguishable students accumulatively over the 5-years Bachelor degree. Ranked first among 50 students of the structural engineering under-graduate program.
- **Students Union Excellence Award (**1999-2003). Presented by Students Union of Faculty of Engineering - Cairo University to the most distinguishable students based on their academic performance during the corresponding year.

PROFESSIONAL SERVICE

- **Organizer and moderator**, "Industrialized Construction: How to Sustain the Revolution", Symposium, Collegium Helveticum, ETH Zurich. (5/10/2022)
- **Committee Member**, ASCE Paper Award Review Committee, (9/2018 – present)
- **Member**, ConcensusDocs Prefab Contract Working Group, National Institute of Building Sciences, (10/2018 – present)
- **Scientific Committee Member**, 5th International Orthotropic Bridge Conference, ASCE Structural Engineering Institute, Santa Clara, CA (Summer 2019)
- **Member**, Healthcare & Facilities Committee, Construction Industry Institute (CII), (2017 – 2018)
- **Member**, Academic Committee, Construction Industry Institute (CII), (02/2012 – 01/2017)
- **Member**, Breakthrough Strategy Group (BTSG), Academic Committee, Construction Industry Institute

(CII), (06/2015 – 01/2017)

- **Board Member**, SCU Bronco Builders Association, Santa Clara, CA (06/2012 - present)
- **Track Co-chair**, Construction Planning, Control, and Risk Management Track, Construction Research Congress, West Lafayette, IN, 2012.
- **Member**, Faculty Senate Council, Santa Clara University, (01/2012 – 06/2020)
- **Member**, Organizing Committee, First Global Leadership Forum for Construction Engineering and Management Program, West Lafayette, IN, March 20-22, 2011.
- **Judge**, Tilt-up Construction Association Annual Award (August 2014)
- **Member,** Career Services Council, University of Illinois at Urbana-Champaign (2009 – 2010).
- **Reviewer**, Journal of Computing in Civil Engineering, ASCE (2009 - present).
- **Reviewer**, Journal of Construction Engineering and Management, ASCE (2007 - present).
- **Reviewer**, Journal of Automation in Construction, Elsevier (2007 - present).
- **FE/EIT Review Session Instructor**, SCU ASCE Student Chapter (2012 - 2014).
- **Faculty Advisor**, SCU AGC Student Chapter (2013 - present).
- **Reviewer**, Construction Research Congress, Seattle, WA, April 2009.
- **Session Moderator,** Summer Engineering Seminar (Summer 2012) and Spring Engineering Education Days (Fall 2012), Bridge Construction Engineering activity for high school students visiting SCU campus.

PROFESSIONAL MEMBERSHIP

- **American Society of Civil Engineers (ASCE)**, Associate member (2010 - present).
- **American Society for Engineering Education (ASEE),** Student Member (2009 – 2011).
- **Phi Kappa Phi Honor Society**, Member (2009 – 2010).
- **Arab American Association of Engineers and Architects (AAAEA)**, Student chapter in University of Illinois at Urbana-Champaign, Co-founder and Vice-president (2007 - 2010).
- **Egyptian Engineers Syndicate (EEC)**, Member (2003 – present)

LANGUAGE SKILLS

- **English**. Fluent speaking, reading, and writing knowledge.
- **Arabic**. Excellent speaking, reading, and writing knowledge.