

Yahia M. S. Ali

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- **Name:** Yahia Mohammed Samir Ali
- **Nationality:** Egyptian
- **Conscription position:** achieved the military service
- **Position:** - Postdoctoral fellow at School of Civil Engineering, Southeast University, Nanjing, China.
- Lecturer at Department of Civil Engineering - Assiut University, Assiut, Egypt.
- **Foreign languages:** Arabic, English and Chinese.
- **Place of residence:** Nanjing, China.
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Summary

Yahia M. S. Ali is a Structural Engineer and Postdoctoral Research Fellow with extensive expertise in structural analysis, reinforced concrete design, bridge engineering, finite element modeling, and advanced composite structural systems. Experienced in developing analytical, numerical, and experimental solutions for complex structural engineering problems using international design standards and advanced computational tools. Proven ability to integrate structural design principles with AI-assisted engineering, reliability analysis, and sustainable construction materials. Author of 25+ peer-reviewed publications in leading international journals and experienced in multidisciplinary collaboration, technical consulting, and engineering education.

Core Competencies

- Structural Design of Reinforced Concrete and Bridge Structures
- Finite Element Analysis (FEA)
- Structural Assessment and Rehabilitation
- Concrete and FRP Structural Systems
- Bridge Engineering
- Structural Dynamics and Fatigue Analysis
- Reliability-Based Structural Design
- AI-Assisted Structural Engineering
- Sustainable Concrete Materials
- Numerical Simulation and Computational Mechanics
- Technical Consulting and Engineering Reports
- Structural Design Optimization
- Design Code Interpretation (ACI, AASHTO, CSA, AS)

Research Interest

- Structural Engineering and Infrastructure Resilience.
- Reliability and Probabilistic Analysis of Structures.
- Life-Cycle Performance of Concrete Structures.
- Hybrid Steel–FRP Reinforced Systems.
- Finite Element Modeling and AI-Assisted Structural Analysis.
- Structural Health Monitoring and Durability Assessment.

Experience

➤ **Postdoctoral Research Fellow**

School of Civil Engineering, Southeast University, China

February 2024 – Present

- Conduct advanced structural analysis and design research on reinforced concrete, FRP-reinforced concrete, and bridge engineering.
- Develop nonlinear finite element models using Abaqus to evaluate structural performance under static, fatigue, and durability loading conditions.
- Design and assess sustainable structural systems incorporating FRP reinforcement, crumb rubber concrete, and ultra-high-performance concrete (UHPC).

- Develop analytical and numerical methods for structural design optimization and serviceability assessment.
- Apply AI-assisted approaches to improve structural analysis, material optimization, and engineering decision-making.
- Collaborate with multidisciplinary research teams and supervise graduate students in structural engineering projects.
- Published more than 25 peer-reviewed journal papers in leading structural engineering journals, supporting the development of practical design recommendations for reinforced concrete and FRP structures.

➤ **Lecturer / Assistant Lecturer**

Department of Civil Engineering, Assiut University, Egypt

November 2016 – Present

- Teach undergraduate and postgraduate courses in reinforced concrete design, structural analysis, bridge engineering, finite element methods, and engineering materials.
- Supervise graduation projects involving reinforced concrete structures, bridge systems, and structural analysis.
- Provide technical guidance on structural design, numerical simulation, and engineering software applications.
- Develop engineering laboratory activities and practical design exercises aligned with international structural design standards.
- Mentor students in structural analysis, computer-aided engineering, and engineering problem solving.

➤ **Civil Engineer**

Assiut University, Egypt

October 2012 – October 2016

- Assisted in structural design and engineering analysis of reinforced concrete structures.
- Prepared structural calculations, technical reports, and engineering documentation.
- Supported the development and review of structural drawings and design details.
- Participated in engineering research and practical applications related to reinforced concrete materials and structural performance.
- Worked with engineering software to perform structural analysis and evaluate design alternatives.

Technical Design Experience

Structural Design and Analysis

- Designed and analyzed reinforced concrete (RC) structural members, including beams, slabs, bridge deck slabs, and short-span bridge components, following international structural design principles.
- Conducted advanced finite element (FE) modeling and nonlinear structural analysis of reinforced concrete structures using **Abaqus**, supporting the design and assessment of concrete and hybrid FRP–steel structural systems.
- Performed structural behavior evaluation under flexural, shear, fatigue, and durability loading conditions to improve structural safety, serviceability, and long-term performance.
- Developed numerical models for bridge deck slabs, concrete beams, columns, and hybrid reinforced concrete systems, validated against published experimental data and design recommendations.
- Evaluated and optimized the structural performance of innovative construction materials, including crumb rubber concrete, ultra-high-performance concrete (UHPC), and fiber-reinforced polymer (FRP)-reinforced concrete.
- Conducted structural assessment and design verification according to international concrete design provisions, including **ACI 318**, **AASHTO LRFD**, **CSA S806**, and ongoing study of **AS 3600** and **AS 5100**.
- Applied reliability-based approaches and AI-assisted techniques to support structural design optimization, durability assessment, and life-cycle performance evaluation.
- Performed analytical calculations and numerical simulations for reinforced concrete and bridge engineering projects to support design recommendations and engineering decision-making.
- Produced technical reports, engineering documentation, and research-based design recommendations for structural concrete and bridge engineering applications.
- Utilized engineering software including **Abaqus**, **SAP2000**, **AutoCAD**, **Revit**, **Python**, and **Microsoft Office** for structural modeling, analysis, visualization, and technical documentation.
- Performed structural modeling, analysis, and design using **Abaqus**, **SAP2000**, **AutoCAD**, and **Revit** to support engineering assessment and design optimization.

Selected Engineering Projects

- **Bridge Deck Slab Design and Analysis**
 - Developed validated nonlinear finite element models of reinforced concrete bridge deck slabs subjected to static, fatigue, and wheel loading.
 - Proposed design recommendations that improved prediction accuracy compared with existing design approaches.
- **Hybrid Steel–BFRP Reinforced Concrete Structures**
 - Designed and evaluated hybrid reinforcement systems for concrete beams and slabs, optimizing strength, stiffness, crack control, and durability.
- **Crumb Rubber Concrete Structural Members**
 - Designed sustainable reinforced concrete beams incorporating crumb rubber and basalt-FRP reinforcement, assessing flexural performance and developing design recommendations.
- **Shear Performance of Reinforced Concrete Beams**
 - Developed nonlinear finite element models to predict shear behavior and failure mechanisms of RC beams without shear reinforcement.
- **AI-Assisted Structural Engineering**
 - Applied machine learning and data-driven methods to optimize structural performance, experimental design, and material selection for advanced concrete structures.

Education



Southeast University

Doctor of Philosophy, Civil Engineering

Sep 2019 – Dec 2023



Assiut University

Master's Degree, Civil Engineering

Sep 2012 – Oct 2016



Assiut University

Bachelor's Degree, Civil

Engineering Sep 2007 – July

2012

Publications

- 1- Ali, Y. M. S., Wang X, Jnead E, Wu Z. 2026. "Flexural Performance and Design assessment of Sustainable Crumb Rubber Concrete Beams reinforced with Basalt-FRP bars." Structural Concrete. [https://doi.org/ 10.1002/suco.70697](https://doi.org/10.1002/suco.70697).
- 2- Ali, Y.M., Wang, X. and Wu, Z., 2026. "Mechanical performance enhancement of crumb rubber concrete with basalt minibars." Archives of Civil and Mechanical Engineering, 26, 199. <https://doi.org/10.1007/s43452-026-01548-9>.
- 3- Jiang, K., Wang, X., Cheng, C., Ding, J., Liu, S., and Ali, Y. M. S. 2026. "Durability assessment of BFRP-reinforced composite beams incorporating UHP-SSC permanent formwork under marine exposure." Engineering Structures, 363(April), 123028. <https://doi.org/10.1016/j.engstruct.2026.123028>.
- 4- Ali, Y. M. S., Wang, X. and Wu, Z., 2025. "Numerical analysis on the shear performance of hybrid (BFRP/steel) reinforced concrete beams without shear reinforcement." Advances in Structural Engineering, p.13694332251344659. <https://doi.org/10.1177/13694332251344659>.
- 5- Moussa, A.M., Wang, X., Fahmy, M.F., Wu, Z. and Ali, Y. M. S., 2025. "Optimizing seismic performance of self-centering precast concrete bridge columns reinforced with steel and hybrid Steel-BFRP Reinforcement: A parametric study." Soil Dynamics and Earthquake Engineering, 198, p.109570. <https://doi.org/10.1016/j.soildyn.2025.109570>.
- 6- Ali, Y. M. S., Wang, X., Wu, Z. and Moussa, A.M., 2025. "Numerical simulation on the performance concrete short beams reinforced with BFRP and steel bars." Structural Concrete, 26(5), pp.6619-6637. <https://doi.org/10.1002/suco.70201>.
- 7- Ali, Y. M. S., Wang, X. and Wu, Z., 2025. "Bond-slip behavior and failure mechanism of BasaltFRP bars with different surface treatments in crumb rubber concrete." Construction and Building Materials, 490, p.142464. <https://doi.org/10.1016/j.conbuildmat.2025.142464>.
- 8- Liu, S., Wang, X., Su, C., Ali, Y. M. S., Zhu, Z. and Wu, Z., 2025. "Durability

- of hybrid-RC beams with steel and BFRP bars under a simulated marine environment.” *Construction and Building Materials*, 490, p.142497. <https://doi.org/10.1016/j.conbuildmat.2025.142497>.
- 9- Moussa, A.M., Wang, X., Wu, Z. and **Ali, Y.M. S.**, 2025. A novel seismic - resistant system for precast segmental bridge columns incorporating a hollow concrete energy - dissipating unit. *Structural Concrete*. <https://doi.org/10.1002/suco.70306>.
 - 10- Liu, S., X. Wang, Y. Zhou, **Ali, Y. M. S.**, J. Ding, and Z. Wu. 2025. “Experimental and Numerical Study of Concrete Columns Reinforced with BFRP and Steel Bars under Eccentric Loading.” *J. Compos. Constr.*, 29: 1–17. <https://doi.org/10.1061/JCCOF2.CCENG-4849>.
 - 11- Jiang, K., X. Wang, L. Ding, S. Liu, J. Y. R. Liew, J. Zhou, **Ali, Y. M. S.**, and Z. Wu. 2025. “Experimental and analytical investigation on the flexural behavior of FRP bars reinforced composite beams with an ultra-high performance seawater sea-sand concrete permanent formworks.” *Eng. Struct.*, 329 (February). Elsevier Ltd. <https://doi.org/10.1016/j.engstruct.2025.119853>.
 - 12- Liu, S., X. Wang, **Ali, Y. M. S.**, H. Huang, and Z. Wu. 2024. “Evaluation of Deflection Calculation for Hybrid-Reinforced Concrete with Fiber-Reinforced Polymer and Steel Bars.” *ACI Struct. J.*, (121). <https://doi.org/10.14359/51740717>.
 - 13- Liu, S., X. Wang, J. Ding, X. Liang, **Ali, Y. M. S.**, H. Huang, and Z. Wu. 2024. “Design methods and recommendations for flexural concrete beams reinforced with steel-fiber composite bars.” *Eng. Struct.*, 310 (May): 118139. Elsevier Ltd. <https://doi.org/10.1016/j.engstruct.2024.118139>.
 - 14- **Ali, Y. M. S.**, X. Wang, G. Huawei, S. Liu, L. Da, Z. Wu, and A. M. A. Moussa. 2024. “Static and fatigue behavior of concrete bridge deck slabs reinforced with BFRP and steel bars.” *Structures*, 65 (February). <https://doi.org/10.1016/j.istruc.2024.106707>.
 - 15- Xu, W., J. Wu, and **Ali, Y. M. S.** 2024. “Experimental and numerical study on the shear behavior of hybrid BFRP/steel RC beams without shear reinforcement.” *J. Reinf. Plast. Compos.* <https://doi.org/10.1177/07316844241263895>.
 - 16- Mahmoud, M. R. I., X. Wang, M. Altayeb, H. A. M. Al-shami, **Ali, Y. M. S.**,

- and A. M. A. Moussa. 2024. "Experimental and numerical study of the flexural behaviour of semi-precast slab reinforced with prestressed FRP bars." *Structures*, 62 (March): 106197. Elsevier Ltd. <https://doi.org/10.1016/j.istruc.2024.106197>.
- 17- Altayeb, M., Wang, X., Mahmoud, M.R., **Ali, Y.M.S.**, Al-Shami, H.A. and Jiang, K., 2024. AI Agents for UHPC experimental design: High strength and low cost with fewer experimental trials. *Construction and Building Materials*, 416, p.135206. <https://doi.org/10.1016/j.conbuildmat.2024.135206>.
- 18- **Ali, Y. M. S.**, X. Wang, S. Liu, and Z. Wu. 2023. "Behavior of Concrete Bridge Deck Slabs Reinforced with BFRP and Steel Bars" *ACI Structural Journal*, V. 120, No. 5. <https://doi.org/10.14359/51738840>.
- 19- **Ali, Y. M. S.**, Wang X, Abdelaleem T, Liu S, Wu Z. 2023. "Numerical study on the structural performance of the continuous concrete slabs reinforced with hybrid BFRP/steel bars." *Structural Concrete*. 2023. <https://doi.org/101002/suco.202201079>.
- 20- **Ali, Y. M. S.**, T. Abdelaleem, H. M. Diab, and M. M. M. Rashwan. 2023. "Effect of Silica Fume on the Behavior of Lightweight RC Beams Made from Crushed Clay Bricks." *AI Civ. Eng.*, 2 (3). Springer Nature Singapore. <https://doi.org/10.2139/ssrn.4127939>.
- 21- Liu, S., Wang, X., **Ali, Y.M.S.**, Su, C. and Wu, Z., 2023. Flexural Performance and Design of Concrete Beams Reinforced with BFRP and Steel Bars. *Journal of Composites for Construction*, 27(6), p.04023062. <https://doi.org/10.1061/JCCOF2.CCENG-4294>.
- 22- Liu, S., Wang, X., **Ali, Y.M.S.**, Huang, H., Zhou, J. and Wu, Z., 2023. Experimental study on eccentric compression behavior of slender rectangular concrete columns reinforced with steel and BFRP bars. *Engineering Structures*, 293, p.116626. <https://doi.org/10.1016/j.engstruct.2023.116626>.
- 23- **Ali, Y. M. S.**, X. Wang, L. Ding, S. Liu, and Z. Wu. 2023. "Experimental and numerical investigations of the effects of various tensile reinforcement types on the structural behavior of concrete bridge deck slabs." *Eng. Struct.*, 285. Elsevier Ltd. <https://doi.org/10.1016/j.engstruct.2023.116036>.
- 24- Liu, S., X. Wang, **Ali, Y. M. S.**, C. Su, and Z. Wu. 2022. "Flexural behavior and design of under-reinforced concrete beams with BFRP and steel bars."

Eng. Struct., 263. Elsevier Ltd. <https://doi.org/10.1016/j.engstruct.2022.114386>.

- 25- Rashwan, M. M. M., H. M. A. Diab, and Ali, Y. M. S. 2016. "IMPROVING OF LIGHTWEIGHT SELF- CURING CONCRETE PROPERTIES." J. Eng. Sci. Assiut Univ. Fac. Eng., 44 (3): 259–271. <https://doi.org/10.21608/jesaun.2016.117600>.

Software & Design Codes

Structural Analysis & Finite Element Software

- **Abaqus** – Advanced nonlinear finite element modeling of reinforced concrete, FRP-reinforced structures, bridge deck slabs, beams, columns, and composite structural systems.
- **SAP2000** – Structural analysis and design of reinforced concrete and steel structures.
- **AutoCAD** – Preparation and interpretation of structural engineering drawings.
- **Revit** – Building Information Modeling (BIM) and structural modeling.

Programming & Data Analysis

- **Python** – Structural data processing, numerical analysis, AI-assisted structural engineering, and automation of engineering workflows.
- **Microsoft Office Suite** (Excel, Word, PowerPoint) – Engineering calculations, technical reports, and project documentation.

Design Standards & Engineering Codes

- ACI 318 – Building Code Requirements for Structural Concrete
- ACI 440 – Guide for Fiber-Reinforced Polymer Reinforcement
- AASHTO LRFD Bridge Design Specifications
- CSA S806 – Design and Construction of Building Components with FRP
- Australian Standard AS 3600 – Concrete Structures (*currently expanding professional expertise*)
- Australian Standard AS 5100 – Bridge Design (*currently expanding professional expertise*)

Honors & Awards



Best presenter - International Conference on Civil and Urban Engineering (ICCUE)

Sep 2022



Scientific research person of the year - Southeast University

Feb 2022



Scientific research person of the year - Southeast University

Feb 2021

References

Referee	Position & Affiliation	Contact Information	Relevant Expertise
Prof. Xin Wang (PhD Supervisor)	Professor & Vice Dean School of Civil Engineering, Southeast University, China	Email: xinwang@seu.edu.cn Profile: https://iiuse.seu.edu.cn/iiuse_en/2022/0702/c41563a413427/page.htm	FRP composites, structural performance enhancement, durability, large-span structures.
Prof. M. Fahmy	Professor of Structural Engineering Assiut University, Egypt	Email: m.fahmy@aun.edu.eg mfmf1976@yahoo.com Profile: https://aun.edu.eg/engineering/mohamed-fathy-mohamed-fahmy	FRP composites, RC structures, seismic performance, bond behavior, FE modeling, hybrid reinforcement, bridge engineering
Prof. Shehata El Dabh	Professor of Structural Engineering Assiut University, Egypt	Email: shehatareem@aun.edu.eg shehatareem@gmail.com Profile: https://www.aun.edu.eg/engineering/shehata-eldabie-abdel-raheem	Earthquake engineering, seismic analysis, structural dynamics, bridge engineering, offshore structures, SSI, and smart materials
Prof. Hesham Diab (Master Supervisor)	Professor of Structural Engineering Assiut University, Egypt	Email: diab@aun.edu.eg heshamdiab2@yahoo.com Profile: https://www.aun.edu.eg/engineering/hesham-mohamed-ahmed-diab	FRP strengthening, RC behavior, structural modeling, bridge engineering, sustainable composites (BFRP/hybrid systems)