Curriculum Vitae

Personal Information

- **Name:** Ayman Mohamed Assem Ahmed
- **Date of Birth:** June 18, 1979
- **Nationality:** Egyptian
- **Email:** ayman.assem@eng.asu.edu.eg
- **Mobile Number:** +20 101479819
- **ORCID:** 0000-0002-4205-6219
- **Web of Science Researcher ID:** AAF-8975-2019
- **Scopus Author ID:** 57216933318
- **Ain Shams Scholar ID:** rp11836

Biography

Dr. Ayman M. Assem is a distinguished architect, educator, and researcher specializing in **computational design** and its integration into architectural practice and education. With over two decades of experience, he has made a profound impact on the fields of architectural design, urban planning, and digital innovation. Dr. Assem earned his Bachelor's (2001), Master's (2007), and Ph.D. (2011) degrees in Architectural Engineering from Ain Shams University, Cairo, Egypt, where he currently serves as a **Professor of Architecture** in the Faculty of Engineering.

Since 2002, Dr. Assem has been deeply involved in advancing architectural education, fostering a design culture that embraces algorithmic thinking, generative design, and responsive systems. He is the **Unit Head of the Architectural Engineering Program** and the **Director of the Digital Experimentation Lab (DE-Lab)** at the Center of Excellence for Energy. DE-Lab functions as a pioneering hub for digital experimentation, research, and interdisciplinary collaboration.

His research focuses on **computational design, design computing, interactive and responsive environments, AI-driven design processes, and parametric architecture**. Dr. Assem has led and contributed to numerous initiatives exploring the future of digital design, both in academia and the profession, often mentoring students and professionals in emerging design technologies.

In addition to his academic leadership, Dr. Assem is a **registered Architectural Consultant Engineer** with the Egyptian Engineering Syndicate and **founder of UDAAR for Engineering Consultancy and Technology Solutions**, a forward-thinking design office committed to integrating technology with visionary architecture.

Recognized for his pioneering work in **computational design**, Dr. Assem continues to influence the next generation of architects by bridging the gap between digital tools and creative design thinking.

Education

- **Ph.D. in Architecture**, Ain Shams University, Cairo, Egypt, 2011

- o Thesis: "Functional structuring of shape as an economical approach to forming the elements of low-income houses"
- **M.Sc. in Architecture**, Ain Shams University, Cairo, Egypt, 2007
  - o Thesis: "Perception of Design Concepts in Contemporary Trends of Museums Architecture"
- **B.Sc. in Architectural Engineering**, Ain Shams University, Cairo, Egypt, 2001
  - o Grade: Very Good with Honors (Third of the graduated group)
  - o Graduation Project Grade: Excellent

Current Positions

- Professor, Architectural Engineering Department, Faculty of Engineering, Ain Shams University (April 2025 - Present)
- Program Unit head, Architectural Engineering Program, Ain Shams University (2024 - Present)
- General Manager, Digital Experimentation Lab (De-lab), Ain Shams University (2019 - Present)
- Head of Examination Control Committee, Architectural Engineering Dept. (2019 - Present)
- Founder and Managing Partner, UDAAR for Engineering Consultancy and Technology Solutions (2017 - Present)

Previous Positions

- Academic Coordinator, Landscape Architecture Program, Ain Shams University (2021 - 2023)
- Associate Professor, Architectural Engineering Department, Faculty of Engineering, Ain Shams University (March 2020 – April 2025)
- Assistant Professor, Architectural Engineering Department, Ain Shams University (2012 - 2020)
- Research and Development Manager, UNII Engineering Consultancy, Abu Dhabi, UAE (2014 - 2016)
- Founder and Managing Partner, ARCHLINES for Engineering Consultancy and Technology Solutions (2007 - 2013)
- Lecturer, Architectural Engineering Department, Ain Shams University (2002 - 2011)

Professional Licenses

- Architectural Consultant Engineer, Registered in the Egyptian Engineering Syndicate (2017 - Present)

Research Interests

- Design Computing
- Responsive and Interactive Architectural Design

- Digital Architecture
- Spatial Analysis & GIS
- Architectural Education

Publications

1. Ayman Assem, N Ahmed, M Darwish, M Elalfy, M Ezzeldin. (2025). An Interactive 3D Physical Model for Real-Time Management of the Built Environment, Architecture and Urban Planning 2025, Vol. 21, Issue 1, pp. 53-69
2. A Nady, A Assem, M Elalfy, M Ezzeldin, M Darwish. (2025). CITY-Pixels: An Integrated Hardware-Software Framework for Real-Time Interactive Urban Modelling, 15th International Conference on Electrical Engineering (ICEENG), 1-6
3. M Ezzeldin, A Nady, M Darwish, M Elalfy, Ayman Assem. (2025). City-Pixel: An Interactive Method for Architectural and Urban Design, Bridging Physical and Digital Realms, Civil Engineering and Architecture 13(3): 1685-1697
4. Architecture 13 (3), 1685-1697
5. Ayman Assem. (2025). Biomimetic Responsive Space Divider for Co-Working Environments: An Interactive Design Approach, JES Journal of Engineering Sciences, 53(2), 80-99.
6. Ayman Assem. (2025). Bridging Physical and Digital Realms: An Innovative AI-Driven Methodology for Architectural Conceptualization, JES Journal of Engineering Sciences, 53(1), 59-79.
7. Ayman Assem. (2024). Smart Staircase: Interactive Design for Social Distancing and Crowd Management, JES Journal of Engineering Sciences, 52(6), 739-756.
8. Fouad, A.S., Ezzeldin, M., Ayman Assem. (2024). A novel framework for the application of topology optimization in lightweight structures. Architecture and Engineering, 9(3), 3-14.
9. Ayman Assem, Hassan, D.K. (2024). Biophilia in the workplace: A pilot project for a living wall using an interactive parametric design approach. Architecture and Engineering, 9(1), 3-16.
10. Ayman Assem, Mai, K. (2023). The Utilization of Algorithms in the Evaluation of Space Layout Planning in Inpatient Departments, International Journal of Architectural Engineering and Urban Research, 6(2), 220-247.
11. Sally, S., Ayman Assem, Fatema, M. (2023). Enhancing Indoor Environmental Quality in the Post-Pandemic Era: Challenges, Strategies, and Solutions, International Journal of Engineering Research & Technology (IJERT), 12(9).
12. Nihal, M., Shaimaa, K., Hanan, S., Ayman Assem. (2023). Computational Design Approach for Applying Neuro-Architecture Principles in Healthcare Facilities, Architecture and Planning Journal (APJ), 28(3).
13. Ayman Assem, Merna, S. (2023). Computational Design Approach for Applying Neuro-Architecture Principles in Healthcare Facilities, Architecture and Planning Journal (APJ),28(3).
14. Darwish, M., Kamel, S., Ayman Assem. (2023). Extended reality for enhancing spatial ability in architecture design education. Ain Shams Engineering Journal, 14(6), 102104.
15. Darwish, M., Kamel, S., Ayman Assem. (2023). A Theoretical Model of Using Extended Reality in Architecture Design Education, Engineering Research Journal (Shoubra).

16. Fouad, A.S., Ezzeldin, M., Ayman Assem. (2023). Application Of Parametric Design In Lightweight Shell Structures, Engineering Research Journal (Shoubra).
17. Nady, A., Hassan, D.K., Ayman Assem. (2022).A Proposed Framework for Automated Evaluation of Architectural Spatial Configurations Using Fuzzy Logic Approach, JES Journal of Engineering Sciences, 51(1), 19-48.
18. Rana, E., Hassan, D.K., Ayman Assem. (2022). Practices of Biophilic Patterns in Workplace Design, Engineering Research Journal (Shoubra).
19. Sondos, E., Hassan, D.K., Ayman Assem. (2022). Investigating Bio-Inspired Approaches for Designing Psycho-Oncological Support Units in Egypt, Engineering Research Journal (Helwan).
20. Lina, M., Gabr, M., Ayman Assem. (2021). Legalization frameworks in building regulations and their relationship with the Reconciliation Law in Egypt, JES Journal of Engineering Sciences, 50(1), 01-25.
21. Ezzeldin, M., Ayman Assem., Abdelmohsen, S. (2021). Automated assessment of architectural spatial layout configurations using fuzzy logic. Archnet-IJAR: International Journal of Architectural Research, 15(2), 328-343.
22. Ezzeldin, M., Ayman Assem. (2020). GIS-Based Spatio-temporal Analysis for Social Events in Urban Public Spaces. Architecture and Urbanism: A Smart Outlook.
23. Abdelmohsen, S., Ayman Assem., Ezzeldin, M. (2020). School2Share (S2S): A Computational Approach for the Efficient Management of Shared Facilities in Egypt. Architecture and Urbanism: A Smart Outlook.
24. Ayman Assem., Abdelmohsen, S., Ezzeldin, M. (2020). Smart management of the reconstruction process of post-conflict cities. Archnet-IJAR: International Journal of Architectural Research, 14(2), 325-343.
25. Alaa, E., Gabr, M., Ayman Assem, Samir, T. (2020). Evaluating the Quality of the Outdoor Environment of Primary School, Architecture and Urbanism: A Smart Outlook.
26. El-Nably, M., Mansour, Y., Ayman Assem, Aya, E. (2020). The Impact of City Branding and Community Perception Through Social Media on Housing Occupancy Rates: The Case Of El-Shorouk City, Egypt, Conference: SPACE International Conference on Sustainable Architecture, Planning and Urban Design.
27. Ayman Assem., Abdelmohsen, S., Ezzeldin, M. (2019). A Fuzzy-Based Approach for Evaluating Existing Spatial Layout Configurations. Proceedings of the eCAADe/SIGRADI International Conference.
28. Moataz, A., Mansour, Y., Gabr, M., Ayman Assem. (2017). Measuring Urban Quality Of Life Case Study Of Madinet Nasr, Journal of Al-Azhar University Engineering Sector (JAUES).
29. Heba, M., Ashour, A., Laila, K., Ayman Assem. (2017). A Study of the Possibility of Integrating the Economic Activity within the Accommodation as an Approach to Solve the Problem of Low-Income Housing in Egypt
30. Ayman Assem., Abdelmohsen, S., Ezzeldin, M., (2016). A Heuristic Approach for the Automated Generation of Furniture Layout Schemes in Residential Spaces, DCC'16, Seventh International Conference On Design Computing And Cognition.

Teaching Experience

Undergraduate Courses

- Architectural Design (1, 2, 3, 4)
- Architectural Construction
- Building Construction, Working Drawing, Working Design
- Design Methods
- Urban Planning, Town Planning and Housing
- Graduation Project
- Interior Design
- Modeling of the Built Environment, Digital Presentation of the Built Environment, Advanced Computer Applications, GIS

Postgraduate Courses

- Interactive and Responsive Architecture
- Advanced Parametric Design in Arcgitecture
- Housing Studies

Professional Experience

2017-Present, UDAAR for ENGINEERING CONSULTANCY and TECHNOLOGY SOLUTIONS:

- Complex Of Criminal Courts, Sharjah, UAE
- Early Childhood Ghazal Hub, Khalifa City, Abu Dhabi
- Makkah Gateway Complex, Makkah, KSA
- Mohamed Bin Zayed University, Dhafra, UAE
- World Defense Show, Riyadh - KSA
- OPM center, Food Court, Riyadh - KSA
- New Salheya University, Sharqia, Egypt
- Capstone Cliff Residence, Sheikh Zayed City, Egypt
- International Limited Competition for Hadith Narrators Museum "The Quest of Light"-Al Madina, KSA
- Sales & Marketing Headquarters, Suncapital, Arabia Holding-Giza, Egypt
- ENTRADA STRIP MALL, SOROUH Developments - New Capital, Egypt
- International Competition for Dubai Creek Harbour Iconic Mosque "ISTIQAMA MOSQUE," EMAAR-Dubai, UAE
- Chamber of Commerce and Industry, Jazan, KSA
- CAMPEIRO Residential Compound, Sheik Zayed, Egypt
- International Competition for DAR ALULOUM LIBRARY, El-Jouf, KSA
- International Competition for Art Prison Museum "Foluim Trilaterum", Favignana Island, Italy

- International Competition of Dubai Feather Skycraper, "Flocks in Flux," Dubai, UAE (Award Winning: Mentioned Prize)
- Private Villa, Beirut, Lebanon
- King Marriott University Alexandria, Egypt
- ENTRADA Residential Compound, SOROUH Developments - New Capital, Egypt
- GIPF Offices - Oshana Region, Namibia
- Furniture Exhibition-Suez, Egypt

2014-2017, UNii Engineering Consultancy Projects:

- Emaar Square - Cairo, Egypt
- Merryland Casino-Cairo, Egypt (Renovation)
- Nile Tower Rod El Farag - Cairo, Egypt
- Najmat Towers C1-Abu Dhabi, UAE
- Al Rawda Towers - Abu Dhabi, UAE
- ADIB Mosque - Abu Dhabi, UAE
- Al Mansouri Villa - Qatar
- Kaizen Dubai Office Building - Dubai, UAE
- VVIP Villa: Mr. Saied Elgahfly - Abu Dhabi, UAE
- Lusail Residential Towers, Doha, Qatar
- Umm Qarn Equestrian School, Doha, Qatar
- JAZY Residence, JAZY Avenue, JAZY Gardens, New Cairo, Egypt
- YAS Golden Pyramids: Hotel, Mega Mall, Resort, Residential, AL haram, Cairo, Egypt
- YAS Gardens, Badr City, Egypt
- YAS Residential, Nasr City, Cairo, Egypt
- Community Sports Facilities, Abu Dhabi, UAE
- International British School, New Cairo, Egypt
- Sea Palace Majlis, Abu Dhabi, UAE (Interior Design)
- ADIB Mosque, Abu Dhabi, UAE (Interior Design)

Earlier Projects:

- Floating City - Sidi Kairyr-Alexandria, Egypt (2013)
- Multistory Residential Building - Elsharqia, Egypt (2013)
- Hospital - Elsharqia, Egypt (2013)
- Poultry Farm - KSA (2013)
- Hajij housing Towers - Makkah, KSA (2012)
- Al-Amir Meqren Park - El Madina, KSA (2012)
- The Diplomatic Residential Compound - New Cairo, Egypt (2012)
- Residential Neighborhood (3000 Housing units) - Alharsha, Tripoli, Libya (2011)
- King Saud University & Its Faculty of Science, EL Goof Campus, EL Goof, Saudi Arabia (2004)
- Two developing housing projects - EL Shabaan & EL Hessa Villages, Almag - Tabook Governorate, Saudi Arabia (2003)

Urban Planning Experience

- GIS Expert, Preparation of Local Area Development Plans (LADPs) for two informal areas in Cairo Governorate, Participatory Infrastructure Project (PIP), Deutsche Gesellschaft fur International Zusammenarbeit (GIZ)
- GIS Expert and Planner, Quoz Al Nakkasah - Mecca, KSA UNii Engineering Consultancy, Abu Dhabi, UAE
- GIS Expert and Planner for various housing projects and strategic plans for small cities in Egypt and Libya

Awards and Honors

- Mentioned Prize, International Competition of Dubai Feather Skyscraper, "Flocks in Flux," Dubai, UAE (2017)
- Honorable Prize, Mural Paintings Competition, Holy Makkah, Saudi Arabia (2010)
- First Prize, Medina's Third Annual Competition 2001, The Smart Village Youth Ideas Competition (2001)

Skills

- Software: Rhino/Grasshopper, GIS/Arc Info 10, AutoCAD (2D & 3D), 3DMAX, Autodesk Revit, SketchUp, Adobe Photoshop, MS-Office, Python
- Languages: Arabic (Native), English (Very Good)

Professional Memberships

- Reviewer for several international academic journals
- Member of the Egyptian Engineering Syndicate