Aya Shaker

Architecture | Design Technology

I am an Architect with a diverse and comprehensive background in the field, having collaborated with cross-functional teams to deliver successful creative solutions to complex technical challenges. My expertise lies in developing software solutions for the AEC industry and utilizing advanced emerging technologies, to enhance the design and construction processes.

Contact Info:

Email: ashaker.aya@gmail.com

Education:

- **Master of Advanced studies in Architecture and Digital Fabrication**
  Eidgenössische Technische Hochschule Zürich (ETH), Zürich, Switzerland.
  September 2018 - September 2019

- **Bachelor of Architecture**
  American University of Sharjah, Sharjah, UAE.
  September 2009 - June 2014

Technical Skills:

- Programming Languages: Python, C#
- Visual Programming: Grasshopper, Dynamo
- Database management: Microsoft SQL
- CAD software: AD Revit, AD AutoCAD, AD Maya, Mcneel Rhinoceros
- Graphic Design: Adobe InDesign, Adobe Illustrator, Adobe Photoshop
- Office Software: Microsoft Office, Microsoft Excel, Microsoft Powerpoint

Language Proficiencies:

- Arabic: Native
- English: Fluent
- French: Beginner

Professional Experience:

- **September 2022 - Present**
  Freelance - Design Technology Consultant

- **February 2020 - August 2022**
  BESIX – Dubai, UAE
  Architect/Software Developer

  - Developed a **Single Parameter Variation Application** for Deltares D-Sheet Piling that enables users to quickly and easily produce new Dsheet files for a range of values of a single parameter, execute computations, and generate a results summary. The strength of this tool rests in its ability to quickly produce trustworthy results that, if a manual workflow were to be employed, would typically take 10 times longer to produce.
  - Developed a **Single Story Concrete Building Modeling Automation** in CSi ETABS 2016, the program acts as a tool to increase the productivity of the structural engineering team. This application's major feature is the automatic grouping of structural elements into pre-specified categories depending on where those parts are located within the overall structure. This function not only expedites the process of giving elements attributes, but it also lowers the possibility of human error throughout the modelling process.
  - Co-developed developed an **Autodesk Revit Plugin** that programmatically sets up models, informs, and extracts

precise material take-off quantities as part of a digital One-Stop-Shop for project reporting to allow the stakeholders to make data-driven decisions and manage projects more efficiently and effectively.
- Co-authored data infrastructure and workflows from/to Microsoft SQL server.
- Authored the technical documentation for the developed software.
- Provided end-user training for the developed tools and incorporated their feedback into the tools' implementation.

- **July 2017 - August 2018**
  SIEC (Studio International Engineering Consultants) – Dubai
  Site Project Architect

  - Inspected on-site progress and assessed the quality of all architectural applications.
  - Reported critical issues and concerns to the Senior Resident Engineer for prompt action.
  - Ensured that site works complied with the project's quality standards and contractual requirements.
  - Reviewed shop drawings, material approval submittals, RFIs to ensure compliance with project specifications.

- **July 2015 - June 2017**
  SIEC (Studio International Engineering Consultants) - Dubai
  Design Architect

  - Led the development of architectural designs from schematic stage to tender stage for a diverse range of projects, including residential and commercial developments.
  - Prepared architectural submittals for clients and coordinated with other disciplines to ensure compliance with contractual requirements.
  - Coordinated with the liaison officer to prepare and submit required documents to authorities and ensure compliance with local building codes and regulations.
  - Collaborated with a multi-disciplinary team of specialists and sub-consultants to accommodate design requirements and assess its implications on the overall architecture.
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Academic Research Experience:

- **Eidgenössische Technische Hochschule Zürich (ETH), Zürich, Switzerland**
  MAS DFAB ETH – September 2018 – September 2019

  - Co-developed a comprehensive parametric concrete 3D printing workflow of design geometry generation, geometry validation, and analysis to ensure the printing feasibility of the design geometry according to the material constraints, 3D geometry slicing, and printing path generation.

- **American University of Sharjah, Sharjah, UAE**
  Undergraduate Thesis – September 2013 – June 2014

  - Designed the curriculum and research plan for the selected topic of study.
  - Created a streamlined workflow from parametric design to digital fabrication to improve efficiency and precision.
  - Constructed partial-scale prototypes to explore various geometric possibilities and refine design concepts.
  - Built and tested full-scale prototypes to gain insight into material behavior and adjust the design accordingly

Publications:

- Shaker, A., Khader, N., Reiter, L., & Anton, A. "3D Printed Concrete Tectonics: Assembly Typologies for Dry Joints." In ACADIA 2021: Realignments: Toward Critical Computation. Proceedings of the 41st Annual Conference of the Association for Computer Aided Design in Architecture, edited by Dörfler, K., Parascho, S., Scott, J.,Bogosian, B., Farahi, B., Grant, J., Garcia del Castillo y López, J., Noel, V., Association for Computer Aided Design in Architecture, 2021, pp. 420-427. DOI: 10.3929/ethz-b-000528522.