Moustafa Elsayed

Civil Engineer / GIS Analyst

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Education

Florida A&M University | Tallahassee, USA — *Expected: May 2025*

Master of Engineering, Civil Engineering | Construction Management — *GPA: 4.0/4.0*

Relevant Coursework:

- Statistical Applications for Engineers
- Big Data Analytics in Engineering
- Engineering Data Analysis
- Building Information Modeling
- Sustainable and Green Construction
- System of Systems Analysis and Planning

Hong Kong Polytechnic University | Hung Hom , Hong Kong — *Dec 2022*

Master of Science, Urban Informatics and Smart Cities

Relevant Coursework:

- Urban Big Data
- Urban Planning and Urban Design
- Principles of GIS
- Urban Science and Systems
- Smart Cities: Technologies and Solutions
- Simulation and IT Applications in Construction

University of Jordan | Amman, Jordan — *Dec 2019*

Bachelor of Science, Civil & Environmental Engineering

Experience

Florida A&M University, Department of Civil & Environmental Engineering

~ **Research Assistant (Sustainable Infrastructure Management Lab)** — *Jan 2023 - Present*

- Lead cutting-edge research on data-driven planning for optimizing material recovery and sustainability in demolition projects, integrating advanced construction management techniques.
- Contribute to EPA-funded projects aimed at quantifying and reducing the carbon footprint of demolition processes, contributing to the development of sustainable practices in the demolition field.
- Contribute to an NSF-funded project focused on developing a Spatiotemporal Sustainability Method for Post-Storm Vegetative Debris Management, addressing critical challenges in disaster waste recovery.

~ **Instructor (Geomatics Engineering Lab)** — *Jan 2023 - Dec 2024*

- Led and managed the Geomatics Lab for civil engineering students for two consecutive years, focusing on hands-on geospatial data analysis and surveying applications.
- Introduced foundational design principles using AutoCAD, enabling students to apply these skills to real-world projects.

Hong Kong Polytechnic University

~ **Research Assistant (Smart Infrastructure Management Systems Lab)** — *Apr 2021 - Dec 2022*

- Pioneered advanced data analysis methodologies for non-contact sensors in sewer systems, enabling precise detection of blockages and improving system efficiency.
- Developed an innovative web-based software tool that automates alert notifications via email and integrates real-time updates through an interactive GIS map, enhancing system monitoring and response times.
- Designed and implemented a systematic approach for text and data mining, successfully extracting and analyzing historical infrastructure maintenance records to support decision-making.
- Built a comprehensive GIS database for Hong Kong's drainage infrastructure, adopted by governmental drainage departments to improve infrastructure management and strategic planning.

Engineered Palaces for Construction Contract

~ **Founder & Civil Engineer** | Amman, Jordan — *Jan 2020 - Present*

- Established a civil engineering consultancy focused on sustainable construction practices and project management in urban environments.

Computer Skills

Geospatial and Design Tools:

- ArcGIS Pro
- AutoCAD
- Revit
- Navisworks
- AutoCAD Civil 3D
- 3D Max
- V-ray Render
- Lumion

Project Management and Simulation Tools:

- Primavera
- Prokon
- Anylogic
- Netlogo

Programming Languages & Frameworks:

- HTML
- JavaScript
- MATLAB
- SQL
- Python (PyTorch, TensorFlow, Flask, Pandas, Scikit-learn, etc.)

Data Analysis & Visualization Tools:

- MS Excel
- RapidMiner
- Orange Data Mining
- Tableau
- MS Power BI
- Gephi (Networks Visualization Tool)

Additional Skills:

- Artificial Intelligence
- Big Data Analysis
- Geospatial analysis
- Optimization
- Algorithms Development
- Simulation
- Building Information Modeling
- Websites design

Publications

Articles in Refereed Journals

- Mohandes, S. R., Kineber, A. F., Abdelkhalek, S., Kaddoura, K., **Elsayed, M.,** Hosseini, M. R., & Zayed, T. (2022). Evaluation of the critical factors causing sewer overflows through modeling of structural equations and system dynamics. Journal of Cleaner Production, 375, 134035.
- Alshami, A., **Elsayed, M.,** Mohandes, S. R., Kineber, A. F., Zayed, T., Alyanbaawi, A., & Hamed, M. M. (2022). Performance Assessment of Sewer Networks under Different Blockage Situations Using Internet-of-Things-Based Technologies. Sustainability, 14(21), 14036.
- Alshami, A., **Elsayed, M.,** Ali, E., Eltoukhy, A. E., & Zayed, T. (2023). Harnessing the Power of ChatGPT for Automating Systematic Review Process: Methodology, Case Study, Limitations, and Future Directions. Systems, 11(7), 351.
- Alshami, A., **Elsayed, M.,** Ali, E., Eltoukhy, A. E. E., & Zayed, T. (2023). Monitoring Blockage and Overflow Events in Small-Sized Sewer Network Using Contactless Flow Sensors in Hong Kong: Problems, Causes, and Proposed Solution. IEEE Access, 11, 87131–87149. https://doi.org/10.1109/ACCESS.2023.3305275
- Alshami, A., Ali, E., **Elsayed, M.,** Eltoukhy, A. E. E., & Zayed, T. (2024). IoT Innovations in Sustainable Water and Wastewater Management and Water Quality Monitoring: A Comprehensive Review of Advancements, Implications, and Future Directions. IEEE Access, 12, 58427–58453. https://doi.org/10.1109/ACCESS.2024.3392573
- Mohandes, S. R., Kaddoura, K., Singh, A. K., **Elsayed, M. Y.,** Banihashemi, S., Antwi-Afari, M. F., OLAWUMI, T., & Zayed, T. (2024). Application of a hybrid fuzzy-based algorithm to investigate the environmental impact of sewer overflow [Review of Application of a hybrid fuzzy-based algorithm to investigate the environmental impact of sewer overflow]. Smart and Sustainable Built Environment. https://doi.org/10.1108/SASBE-09-2023-0281

Publications

Peer-reviewed Conference Proceedings

- **Elsayed, M.,** & Choi, J. A Small-Scale Simulation Approach to Educate the Next Generation of Engineers about Sustainability Challenges in Building Demolition. In Construction Research Congress 2024 (pp. 366-375).

SERVICE AND LEADERSHIP INITIATIVES

- Leadership Coach | BRAVEN (San Francisco State University) — Jan 2024 - Present
- Research Mentor (Undergraduate Research Opportunity Program) | Florida A&M University — Jan 2023 - Present
- Member of American Society for Civil Engineers (ASCE) | Membership Team leader — Jan 2018 - Dec 2019
- Member of the International Student Council | University of Jordan — Sep 2017 - May 2018
- Delegated representative of the Egyptian community students | University of Jordan — Sep 2016 - May 2018