

# AHMAD MOUSA, PHD, PE

Assistant Professor

Department of Civil Engineering – University of Nottingham Ningbo China

Adjunct Research Professor

School of Engineering – Monash University Malaysia



[Google Scholar](#)

Citations **614**

h-index **13**

i10-index **15**

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- <https://scholar.google.com/citations?user=eAQJGNEAAAAJ&hl=en&authuser=2>
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## PERSONAL STATEMENT

Engineering for me is a mindset... a culture... a virtue that influenced every bit of my life. My career is a blend of practice and academia, which I am often unable to decouple or dispute their close relevance. I celebrated the rewards and equally welcomed the lessons that they both brought to my shore, not to mention ... the way they shaped my academic philosophy and views in the profession.

## EDUCATION

**PhD, Civil Engineering, Georgia Institute of Technology, Atlanta, USA [2006]**

[Major: Geotechnical Engineering; Minor: City Planning, College of Architecture]

**MS, Civil Engineering, Purdue University, West Lafayette, USA [2000]**

[Major: Geotechnical Engineering]

## PROFESSIONAL REGISTRATIONS & AFFILIATIONS

- Registered Professional Engineer (PE), California State, License # 74439
- Registered Geotechnical Engineer, Egypt, License # 01/06409
- Registered Graduate Engineer (GE), Board of Engineers Malaysia. P.Eng. (Pending)
- Certified Project Manager (CPM) - accredited by the Project Management Institute (PMI)
- Board Member, Soil Improvement Committee, The Egyptian Code for Geotechnical Engineering and Foundations (202)

## ACADEMIC APPOINTMENTS & TEACHING EXPERIENCE

**Assistant Professor**

**University of Nottingham Ningbo China – Faculty of Science and Engineering**

Ningbo, China

Aug 2022 – to date

- Fundamentals of Materials - CIVE2054
- Portfolio of Civil Engineering Studies 1 and 2 - CIVE1018 and CIVE2052
- Structural Analysis 1- CIVE1025

**Senior Lecturer**

**Monash University - School of Engineering**

Selangor, Malaysia

Aug 2014 – Aug 2022

- Engineering Structures - ENG1020
- Geomechanics I - CIV2242
- Geomechanics II - CIV3247
- Groundwater and Environmental Geomechanics - CIV3248

- Final Year Project - CIV4210 and CIV4211
- Civil Engineering Practice (Capstone Project) - CIV4212
- Ground Hazards Engineering – CIV4248
- Foundation Engineering - CIV4249
- Green Building - CIV5801

**Visiting Professor**  
**McGill University - Department of Civil Engineering and Applied Mechanics**  
 Montreal, Canada  
 Nov 2015 – Feb 2016

- Co-supervising PhD students in the Geogroup
- Conducting collaborative research

**Lecturer**  
**The German University in Cairo (GUC) - Faculty of Engineering and Materials Science**  
 Cairo, Egypt  
 2012 – 2014

- Introduction to Geotechnical Engineering - CIS501
  - Geotechnical and Foundation Engineering - CIS606
  - Advanced Geotechnical and Foundation Engineering - CIS703
  - Numerical Methods for Engineers - CIG601
  - Engineering Bachelor Thesis - ENG800
- (One of my thesis projects received the best bachelor's project in geotechnical engineering at the national level. Award presented by the Prime Minister of Egypt on “**the Civil Engineer Excellence Day**” - Oct 2014)

**Graduate Teaching Assistant**  
**Georgia Institute of Technology - School of Civil and Environmental Engineering**  
 Atlanta, USA  
 2002 – 2005

- Introduction to Engineering Graphics and Visualization - CEE1770
- Geosystems Engineering - CEE4400
- Subsurface Characterization - CEE4420
- Soil Mechanics - CEE6402
- Constitutive Modeling of Soils - CEE6463

**Graduate Teaching Assistant**  
**Purdue University - School of Civil and Environmental Engineering**  
 West Lafayette, USA  
 Spring 2000

- Civil Engineering History, Ethics, Engineering Economic Analysis, and Case Studies - CE394
- Geotechnical Engineering II - CE483

**Graduate Teaching Assistant and Laboratory Instructor**  
**The American University in Cairo (AUC) - Engineering Department**  
 Cairo, Egypt  
 1994 – 1999

- Engineering Mechanics I - ENGR212
- Strength and Testing of Materials - ENGR229
- Structural Analysis I - CENG302
- Structural Analysis II - CENG303
- Construction Materials and Quality Control - CENG323
- Mechanics of Materials - MENG355
- Soil Mechanics - CENG411
- Methods and Equipment for Construction I - CENG423
- Methods and Equipment for Construction II - CENG424
- Finite Element Method and Applications in Design - MENG453

- Construction Materials Lectures, Continuing Education, Engineering Services Department

## **ACADEMIC AFFILIATIONS & SERVICES**

- Postgraduate Students Advisor, Faculty of Science and Engineering, University of Nottingham Ningbo China
- Industry Officer, Faculty of Science and Engineering, Nottingham University Ningbo China
- Chair, Industrial Training Committee, Monash University
- Chair, Occupational Health and Safety Committee, Monash University
- Member, Mentor-Mentee Platform, Monash University
- Member, SOE News Publication Committee, Monash University
- Member, Soil Improvement Committee, Board of Egyptian Code of Practice
- Member, Accreditation Committee, the German University in Cairo
- Member, Mentoring Committee, the German University in Cairo

## **RESEARCH GRANTS**

- **Developing a Geotechnical Tool for In-Situ Soil's Texture Determination.** NSF I-Corps Hub: Northeast Region - NSF 2048602, **USD 50,000, Apr. 2023.**
- **Developing a Geotechnical Tool for In-Situ Soil's Texture Determination.** NSF I-Corps Hub: Northeast Region Cohort 7, **USD 3,000, Jan 2023.**
- **Utilizing Coal Bottom Ash as a Portland Cement Replacement for Non-Structural Cementitious Products in a Chinese Context,** New Researchers Grant, University of Nottingham Ningbo China, **RMB 30,000. Dec 2022**
- **Pilot Forecast Modelling for Hydraulic Performance of Waste Containment Barriers.** Monash Warwick Alliance Catalyst Fund, **AUD 29,000 & GBP 13,000.** Dec 2018. **[Complete]**
- **Effect of hydraulic loading on the stability of capping systems for landfill applications.** Monash University Malaysia Mobility Grant Scheme, **\$5,000.** Oct 2018. **[Complete]**
- **Micro-structure and macro behavior of transitional soils with implications on surface drainage during flood events,** Fundamental Research Grant Scheme (FRGS), **\$40,000.** March 2021.
- **Development of a sustainable permeable geopolymer pavement system using fine industrial waste,** Monash University Malaysia - Sunway Group of Companies Grant Scheme, **\$25,000.** Dec 2017. **[Complete]**
- **Development and implementation studies on interlocking solar concrete paver (ISCP) systems,** Monash Sustainable Community Grant Scheme. **\$75,000.** Dec 2017. **[Complete]**
- **Investigation of spatial-temporal fines migration in porous media,** Monash University Malaysia, School of Engineering Internal Grants, **\$8,500.** 2015. **[Complete]**
- **Investigation of the structural performance of underground cavities in Malaysian soil deposits,** Ministry of Science Technology and Innovation (MOSTI), **\$60,000.** Dec. 2014. **[Deferred].**

## **PUBLICATIONS**

### **Refereed Journal Papers:**

<b>Quartile</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Other</b>
<i>SCImago Journal Rank (SJR)</i>	18 (64%)	7 (25%)	1 (4%)	-	2 (7%)
<i>Journal Citation Reports (JCR) - Clarivate</i>	11 (39%)	9 (32%)	3 (11%)	-	5 (18%)
<i>Chinese Academy of Science (CAS)</i>	7 (25%)	6 (21%)	3 (11%)	7 (25%)	5 (18%)

<i>Corresponding Author</i>	<b>26 (93%)</b>
<i>First Author</i>	<b>12 (43%)</b>
<i>Single Author</i>	<b>8 (29%)</b>
<i>With supervised students</i>	<b>9 (32%)</b>
<i>REF4*</i>	<b>4 (14%)</b>
<i>REF3*</i>	<b>6 (21%)</b>

- [1] **A. Mousa\***. “Utilization of coal bottom ash from thermal power plants as a cement replacement for building: A promising sustainable practice”. *Journal of Building Engineering*, Vol 74. <https://doi.org/10.1016/j.jobee.2023.106885>. [JCR:Q1, SJR:Q1 (Top 2%), CAS:Z2 – REF3\*]
- [2] S. Dassanayake, **A. Mousa\***, G. Fowmes\*, K. Zamara, S. Susilawati (2022). “Forecasting the short-term moisture profile in a landfill capping system using NARX model”. *Geotextiles and Geomembranes*, 51(1), 282-292. <https://doi.org/10.1016/j.geotextmem.2022.08.005>. [JCR:Q1, SJR:Q1 (Top 8%), CAS:Z1 – REF3\*]
- [3] A. B. Al-Mekhlafi, I. Othman, A. F Kineber, **A. Mousa**, A. Zamil (2022). Modeling the Impact of Massive Open Online Courses (MOOC) Implementation Factors on Continuance Intention of Students: PLS-SEM Approach. *Sustainability*, 14(9), 5342. <https://doi.org/10.3390/su14095342>. [JCR:Q2, SJR:Q1 (Top 13%), CAS:Z2]
- [4] **A. Mousa\***, M. Hussein. “Prediction of shear wave velocity in fine-grained soils from CPT measurements: A global approach”. *Transportation Research Record*. <https://doi.org/10.1177/03611981221075627>. [JCR:Q2, SJR:Q2, CAS:Z4]
- [5] **A. Mousa\***, M. Hussein, A. Farouk (2022). “A Value-Engineering Methodology for Selection of an Optimal Bridge System”. *Transportation Research Record*, 2676(4), 483-498. [JCR:Q2, SJR:Q2, CAS:Z4]
- [6] S. Dassanayake, **A. Mousa\***, S. Ilankoon, G. Fowmes (2021). “Internal Instability in Soils: A Critical Review of the Fundamentals and Ramifications”. *Transportation Research Record*, 2676(4). <https://doi.org/10.1177/03611981211056908>. [JCR:Q2, SJR:Q2, CAS:Z4]
- [7] S. Dassanayake, **A. Mousa\*** (2021). “A flow-dependent estimation of constriction size distribution in gap-graded soils: an integrated statistical approach”. *Geotechnique Letters*, 12(1), 1-25. <https://doi.org/10.1680/jgele.21.00039>. [JCR:Q2, SJR:Q1, CAS:Z4]
- [8] S. Kantoush, **A. Mousa\***, M. Shahmirzadi, T. Toshiyuki, T. Sumi (2021). “A pilot field implementation of suction dredging for sustainable sediment”. *ASCE Journal of Hydraulic Engineering*, 147(2). [https://doi.org/10.1061/\(ASCE\)HY.1943-7900.0001843](https://doi.org/10.1061/(ASCE)HY.1943-7900.0001843). [JCR:Q2, SJR:Q2, CAS:Z1]
- [9] M. Zamani, S. Nikafshar, **A. Mousa\***, A. Behnia (2020). “Bacteria encapsulation using synthesized polyurea for self-healing of cement paste”. *Construction & Building Materials*, 249. <https://doi.org/10.1016/j.conbuildmat.2020.118556>. [JCR:Q1, SJR:Q1 (Top 3%), CAS:Z1 – REF4\*]
- [10] S. Gooi, **A. Mousa\***, Daniel Kong (2020). “A critical review and gap analysis on the use of coal bottom ash as a substitute construction material in concrete”. *Journal of Cleaner Production*, 268, 121752. <https://doi.org/10.1016/j.jclepro.2020.121752>. [JCR:Q1, SJR:Q1 (Top 1%), CAS:Z1– REF4\*]
- [11] S. Dassanayake, **A. Mousa\*** (2020). “Probabilistic stability evaluation for wildlife-damaged earth dams: A Bayesian approach”. *Georisk: Assessment and Management of Risk for Engineered Systems and Geohazards*, 14(1), 41-55. <https://doi.org/10.1080/17499518.2018.1542499>. [JCR:Q2, SJR:Q1 (Top 11%), CAS:Z2]
- [12] A. Fayed, **A. Mousa\*** (2019). “Shear wave velocity in the East Nile Delta Clay: Correlations with static CPT measurements”. *Geotechnical and Geological Engineering*, 38, 2303–2315. <https://doi.org/10.1007/s10706-019-01089-4>. [SJR:Q1 (Top 15%)]
- [13] S. Dassanayake, **A. Mousa\***, J. Lee; C. Chua (2019). “A statistical inference of hydraulic shear and clogging in internally unstable soils”. *Geotechnique Letters*, 10(1): 1-6. <https://doi.org/10.1680/jgele.19.00082>. [JCR:Q2, SJR:Q1]
- [14] **A. Mousa\*** and T. Youssef (2019). “Genesis of transitional behavior in geomaterials: A review and gap analysis”. *Geomechanics and Geoengineering*, 16(4): 298-324. <https://doi.org/10.1080/17486025.2019.1670871>. [SJR:Q2]
- [15] A. Behnia, H. Kian Chai, **A. Mousa\***, S. A. Ravanfa (2018). “A Novel damage index for online monitoring by integration of process controlling into acoustic emission technique”. *Mechanical Systems and Signal Processing*, 119(15): 547-560. <https://doi.org/10.1016/j.ymsp.2018.09.030>. [JCR:Q1, SJR:Q1 (Top 2%), CAS:Z1 – REF4\*]
- [16] **A. Mousa\***, M. Mahgoub, M. Hussein (2018). “Lightweight concrete in America: presence and challenges”. *Sustainable Production and Consumption*. 15, 131–144. <https://doi.org/10.1016/j.spc.2018.06.007>. [JCR:Q1, SJR:Q1 (Top 7%), CAS:Z2 – REF3\*]
- [17] A. Behnia\*, H. K. Chai, M. GhasemiGol. A. Sephehrinezhad, **A. Mousa\*** (2018). “Advanced damage detection technique by integration of unsupervised clustering into acoustic emission”.



- [18] G. R. Saghaee, **A. Mousa\***, M. A. Meguid\* (2017). “Plausible failure mechanisms of wildlife-damaged earth levees: insights from centrifuge modeling and numerical analysis”. *Canadian Geotechnical Journal*, 54 (10),1496-1508. <https://doi.org/10.1139/cgj-2016-0484>. [JCR:Q1, SJR:Q1, CAS:Z2]
- [19] **A. Mousa\*** (2017). “Revisiting the calibration philosophy of constitutive models in geomechanics”. *ASCE International Journal of Geomechanics*, 17(8). [https://doi.org/10.1061/\(ASCE\)GM.1943-5622.0000895](https://doi.org/10.1061/(ASCE)GM.1943-5622.0000895). [JCR:Q2, SJR:Q1, CAS:Z4]
- [20] **A. Mousa\*** (2016). “The gray zone: the fabric and consistency of natural transitional soils”. *Arabian Journal of Geosciences*, 9(39). <https://doi.org/10.1007/s12517-015-2193-9>. [JCR:Q3, SJR:Q2, CAS:Z4]
- [21] **A. Mousa\*** (2015). “Six Sigma DMAIC for shaking stagnant construction cultures”. *Journal of Civil Engineering and Environmental Sciences*, 1(1), 13-20. <http://dx.doi.org/10.17352/2455-2976.000004>.
- [22] **A. Mousa\*** (2015). “A business approach for transformation to sustainable construction in developing countries”. *Resources, Conservation & Recycling*, 101, 9–19. <https://doi.org/10.1016/j.resconrec.2015.05.007>. [JCR:Q1, SJR:Q1(Top 1%), CAS:Z1, – REF4\*]
- [23] G. R. Saghaee, **A. Mousa**, M. A. Meguid\* (2015). “Experimental evaluation of the performance of levee structures deteriorated by wildlife activities”. *Acta Geotechnica*, 11(1), 83-93. <https://doi.org/10.1007/s11440-015-0373-0>. [JCR:Q1, SJR:Q1(Top 6%), CAS:Z2 – REF3\*]
- [24] **A. Mousa\***, M. Mahgoub, P. Wiszowaty (2014). “A simple test method for rapid measurement of fines content in soils”. *ASTM Geotechnical Testing Journal*, 37(2), 177-189. <https://doi.org/10.1520/GTJ20130095>. [JCR:Q3, SJR:Q2, CAS:Z4]
- [25] A. Zidan, **A. Mousa\***, M. Mahgoub (2013). “A survey-based vision for restructuring concrete business in the new residential communities in Egypt”. *The International Journal of Industrial and Systems Engineering Review*, 1(2), 162-172.
- [26] **A. Bayoumi\***, M. A. Meguid (2011). “Wildlife and safety of earthen structures: a review” - Feature Article. *Journal of Failure Analysis and Prevention-ASM International*, 11(4), 295-319. <https://doi.org/10.1007/s11668-011-9439-y>. [SJR:Q3]
- [27] **A. Bayoumi\*** (2011). “On the evaluation of settlement measurements using borehole extensometers”. *Geotechnical and Geological Engineering*, 29(1), 75-90. <https://doi.org/10.1007/s10706-010-9352-2>. [SJR:Q1]
- [28] **A. Bayoumi\***, A. Bobet, J. Lee (2008). “Pullout capacity of a reinforced soil in drained and undrained conditions”. *Finite Elements in Analysis and Design*, 44(9-10), 525-536. <https://doi.org/10.1016/j.finel.2008.01.009>. [JCR:Q1, SJR:Q1(Top 8%) , CAS:Z2– REF3\*]

\* Corresponding author

### **Refereed Conference Papers:**

- [1] R. Liyanage, **A. Mousa**, A. Garg, F. Ahmad, V. Anggraini (2023). “The use of field water retention and ambient temperature for developing the soil-water characteristic curve”. 2nd International Conference on Construction Resources for Environmentally Sustainable Technologies, A Springer book series Lecture Notes in Civil Engineering, Climate Change Adaptation from Geotechnical Perspectives, Editors: Hemanta Hazarika, Stuart Kenneth Haigh, Babloo Chaudhary, Masanori Murai, Suman Manandhar, Fukuoka, Japan, November 20-22, 2023, Springer Nature Singapore Pte Ltd. (in Press).
- [2] M. M. El-Sherbiny, A.L. Fayed, and **A. Mousa** (2022). “A proposed correlation between downhole shear wave velocity and unconfined compressive strength for weak sedimentary rock formations: Insights from Dubai's geology”. Proceedings of the 20<sup>th</sup> International Conference on Soil Mechanics and Geotechnical Engineering, Sydney.
- [3] S. Gooi, **A. Mousa\***, Daniel Kong (2020). “Efficacy of treatments on coal bottom ash as a cement replacement”. In: Shehata M., Anastasopoulos G., Norma M. (eds) Recent Technologies in Sustainable Materials Engineering. GeoMEast 2019. Sustainable Civil Infrastructures. Springer, Cham.

- [4] S. Dassanayake, **A. Mousa\*** (2020). “Hydraulic response of an internally stable gap-graded soil under variable hydraulic loading: A coupled DEM-Monte Carlo approach”, In: El-Naggar H., El-Zahaby K., Shehata H. (eds) Innovative Solutions for Soil Structure Interaction. GeoMEast 2019. Sustainable Civil Infrastructures. Springer, Cham.
- [5] S. Dassanayake, **A. Mousa\***, D. Kong (2019). “Voids distribution of pavement filters subjected to permeating fines: a coupled DEM-statistical inference”. 4<sup>th</sup> International Conference on Civil Engineering and Materials Science (ICCEMS 2019), Bangkok, Thailand.
- [6] A. Rasheed, S. Dassanayake, **A. Mousa\*** (2018). “Suffusion susceptibility in gap-graded granular soils under variable hydraulic loading”. 15<sup>th</sup> International Conference on Structural and Geotechnical Engineering (ICSGE15), Advances in Construction Techniques, Cairo, Egypt, organized by Ain Shams University
- [7] D. Turusaki, M. Kiyota, K. Asazaki, Y. Nakamura, T. Temmyo, M. Mizunuma, **A. Mousa**, S. Kantoush & T. Sumi (2017). “Gravel capping for turbidity control during sediment sluicing upstream of Oouchibaru Dam by the use of ejector pump system”. E-proceedings of the 37th IAHR World Congress. August 13 – 18, 2017, Kuala Lumpur, Malaysia.
- [8] **A. Mousa\*** (2015). “Construction culture and sustainable transformation in developing countries: a business perspective”. The International Conference for Industry-Academia Collaboration. Civil Engineering, Architecture and Building Materials Track, Al-Azhar University, Cairo, Egypt. April 6-8, 2015.
- [9] **A. Mousa\*** (2014). “A micro-insight into the interaction between advanced composites and soils”. International Workshop on Advanced Composites for Engineering Applications - Sustainable Structures and Smart Materials. The German University in Cairo (GUC), New Cairo, Egypt. May 5-6, 2014. pp 86-87.
- [10] **A. Mousa\***, A. Zidan (2014). “3-D panel system: a sustainable building solution for Egypt”. The International Conference for Industry-Academia Collaboration. Civil Engineering, Architecture and Building Materials Track, Fairmont Heliopolis, Cairo, Egypt. March 3-5, 2014.
- [11] T. Youssef, **A. Mousa** (2013). “The usage of recycled construction material, agricultural waste and local soil for low-cost housing in Egypt - A Comprehensive Survey”. International Conference on Recourses & Environmental Sustainable Development (RESD) July. 20-21, 2013, Shenyang, China. (Refereed)
- [12] G.R. Saghaee, M.A. Meguid, **A. Bayoumi** (2012). “On the effects of animal burrows on the performance of homogeneous earthen structures”. GeoManitoba Conference, September 30 - October 3, 2012 Winnipeg, Manitoba, P 5.
- [13] G.R. Saghaee, M.A. Meguid, **A. Bayoumi** (2012). “An experimental procedure to study the impact of animal burrows on existing levee structures”. The 2nd European Conference on Physical Modelling in Geotechnics. 23-24 April 2012. Delft, the Netherlands, P 6.
- [14] **A. Bayoumi\***, W. Huang (2009). “San Joaquin river basin levee rehabilitation prioritization methodology”. A Living River Approach to Floodplain Management: Technical Papers presented at the 32nd Annual Conference of the Association of State Floodplain Managers. Part 4 Levees, May 18-23, 2008, Reno-Sparks, Nevada. P. 77.

\* Corresponding author

### **Other Publications:**

- [1] M. Hussein, M. Mahgoub, **A. Mousa\*** (2021). “Is lightweight concrete a viable product?” Concrete International (ACI), 43(6): 41-44. *Invited article*.
- [2] A. Samih, **A. Mousa**, K. Abdel-Ghani, O. Ezz El Din, M. Ashour, M. Afify. Part 13: Soil Improvement Manual, The Egyptian Code for Geotechnical Engineering and Foundations (202). Soil Improvement Committee. Individual Contribution: Chapter 4 - Jet Grouting.
- [3] **A. Mousa\***, M. Hussein, M. Mahgoub. “Merits and future of lightweight concrete: Insights from USA construction market”. Book Chapter in ***Lightweight Concrete – Materials, Properties, and Applications***. Whittle Publishing, Scotland (in press).

\* Corresponding author

### **Submitted Journal Papers:**

- [1] M.M. Radwan, **A. Mousa\***, E. Zahran. “Prediction of the Pavement Condition Index in Arid Urban Climates using the International Roughness Index”. ***Sustainability***.

- [2] M. Kumar; K. Paramaputra; V. Anggraini, K. Sih Ying, A. Garg, **A. Mousa\***. “Dynamics of soil water content and soil suction under different tree canopy covers in an urban green infrastructure”. ***Building and Environment***.

### **Books in Press:**

- [1] **A. Mousa** and J. Bull. “***Lightweight Concrete – Materials, Properties and Applications***”. Whittle Publishing, Scotland (in press)

### **Manuscripts in Preparation:**

- [1] **A. Mousa\***, V. Anggraini. “Effect of the drilling fluids on the mobilized skin friction along drilled shafts in coralline limestone”. ***Acta Geotechnica***.
- [2] M. Hussein, **A. Mousa\***. Temporary micropiles for emergency bridge repair central New Jersey (Case Study).
- [3] M. Hussein, **A. Mousa\***. Micropiles for foundation retrofit (Case Study)
- [4] A. Fayed, **A. Mousa\***. “On the use of uniaxial compressive strength and SPT value for seismic site classification: Insights from Dubai Geology”. ***Soils and Foundations***.
- [5] A. Kotaem, and T. Youssef, **A. Mousa\***. “Bond behavior of FRP-to-timber joints: A comparative analytical evaluation and model recalibration”. ***Construction and Building Materials***.

### **Professional Presentations:**

- [1] Invited Guest Speaker: ” **Engineering Judgement and Industry-Inspired Research: A Reflective Perspective**”, Shanghai Maritime University, Shanghai, Nov 8, 2023.
- [2] Invited Guest Speaker for TRB Webinar: “**Technical and sustainability aspects of Lightweight Concrete Bridges**” April 12, 2021. This webinar features research from NCHRP Research Report 773: High-Performance/High-Strength Lightweight Concrete for Bridge Girders and Decks. The Transportation Research Board, Washington, DC, April 12, 2021. <http://onlinepubs.trb.org/onlinepubs/webinars/210412.pdf>.
- [3] Invited Guest Speaker: “**Principles and Applications of Groundwater Engineering**”. Department of Civil Engineering, Faculty of Engineering, Ain Shams University, Cairo, Egypt, Dec 19, 2019.
- [4] Invited Guest Speaker: “**Make Your Research Publishable – Lessons Learned**”, Department of Civil Engineering and Applied Mechanics, McGill University, Montreal, Dec 22, 2015.
- [5] Invited Guest Speaker: “**Industry-inspired Research and Teaching Philosophy: A Personal Perspective**”, Civil Engineering Seminar, Monash University, Clayton Jun 19, 2015.
- [6] Workshop Presentation: “**Sustainability and Concrete Industry in Egypt – A Business Perspective**”, Workshop title: “Innovative Methodologies and Technologies for Sustainable Communities”; hosted by the German University in Cairo and jointly sponsored by the German Academic Exchange Service (DAAD), Cairo, Oct. 2-5, 2012.
- [7] Conference Presentation: “**San Joaquin River Basin Levee Rehabilitation Prioritization Methodology**“, the Floodplain Management Association (FMA) Annual Conference, Sep. 2-5, 2008, San Diego, Floodplain Sustainability: Integrating Flood Risk, Land Use and Environmental Stewardship. Sep. 2008.
- [8] Poster Presentation: “**Image Guided Constitutive Modeling of the Brain Tissue**”, 7<sup>th</sup> Sowers Lecture, Georgia Institute of Technology, Atlanta, May 2004
- [9] Poster Presentation: “**Constitutive Model Calibration as an Inverse Problem - New Laboratory Test**”, 8<sup>th</sup> Sowers Lecture, Georgia Institute of Technology, Atlanta, May 2005.

## **PATENTS**

**A. Mousa** and M. Mahgoub. “**The Mold Test: A Proposed Test Method for Rapid Measurements of Approximate Fines Content in Non-Organic Soils**”. Provisional patent application submitted by **New Jersey Institute of Technology**, Disclosure ID 12-011, approved Sep 2011.

## **SUPERVISORY ROLES**

□ **Doctorate degree supervisor** for Sandun Dassanayake Mudiyansele – **School of Engineering at Monash University**. “An Integrated Experimental and Statistical Approach for

Predicting the Progression of Internal Instability in Gap-Graded Granular Soils”. **Graduated Jul 2020.**

- **Master's degree supervisor** for Mohammadhossein Zamani – **School of Engineering at Monash University.** “Synthesis Polyurea Capsules to Encapsulate Bacteria for Self-Healing of Concrete”. **Graduated Sep 2019.**
- **Master's degree supervisor** for Mahmoud Moursy – **School of Engineering at Monash University.** “Design optimization of telecommunication towers”. **Graduated Oct 2023.**
- **Doctorate degree co-supervisor** for Manoj Kumar – **School of Engineering at Monash University.** “An Integrated Intelligent Approach for monitoring and Modelling Water Retention in Urban Vegetated Soil”. **Jul 2023 – todate.**
- **Doctorate advising committee member** for Gholamreza Saghaee – **Department of Civil Engineering and Applied Mechanics at McGill University.** “Investigating the performance of earthen levee structures with induced internal deterioration”. **2012-2017.**
- **Graduation Project Supervisor** for BSc students in civil engineering at **the German University in Cairo.** **2014.**

### **CURRENT COLLABORATIVE RESEARCH**

- Prof. M. Mahgoub (New Jersey Institute of Technology, USA), **Impact of extended time to discharge on concrete durability and performance.**
- Prof. M. Mahgoub (New Jersey Institute of Technology, USA), **developing a robust method for field classification of soils - an innovative apparatus for field estimation of fines content of soils.**
- Prof. A. Fayed (Ain Shams University, Egypt), **the use of seismic CPT to characterize soft clays of delta deposits.**
- Dr. T. Youssef (The French University of Egypt, Egypt), **performance of timber-FRP composite structures.**

### **GRADUATE APPOINTMENTS & RECOGNITIONS**

- **Research Assistantship**, School of Civil and Environmental Engineering, Georgia Institute of Technology, 2000
- **Research Assistantship**, School of Civil and Environmental Engineering, Purdue University, 1999
- **Teaching Assistantship**, the Construction Engineering Unit, the American University in Cairo, 1996
- **Departmental Fellowship**, the Engineering Department, the American University in Cairo, 1996
- **Honor student**, Top 3% of the 400-student class, School of Civil Engineering, Ain Shams University, Cairo, 1992
- **The Government Award of Excellence in Undergraduate Studies**, Ain Shams University, Cairo, 1987-1992

### **INDUSTRY EXPERIENCE**

#### **Senior Project Engineer and Geotechnical Laboratory Technical Director**

**AAI (Tetra Tech)**

Pasadena, CA

Aug 2009 – Feb 2012

#### **Roles:**

- Leading pavement design/build projects for Interstate highway widening
- Design of shallow and deep foundation
- Writing geotechnical reports and memorandums
- Technical review and quality control for the Geotechnical Laboratory
- Special study (Evaluation study on the use of organic matter in levees for USACE)

#### **Featured Project:**

Larose to Golden Meadow Hurricane Protection Project, Preparation of Preliminary Designs for Six Pumping Station - Contract Task Order No. 5, Lafourche Parish, Louisiana: Tetrattech was tasked to



perform a thorough professional geotechnical evaluation for the Flood risk reduction public works in the Larose to Golden Meadow, LA Project for the U.S. Army Corps of Engineers (USACE), New Orleans District. This work was funded by the federal American Recovery and Reinvestment Act of 2009 (ARRA). It is intended to raise the flood wall level by up to eight feet over the existing grade in order to accommodate up to 50 to 100-year level flood conditions. In order to achieve this mission, I performed detailed geotechnical engineering analyses including sheet and H-piling, and soil stability analyses, for a flood risk reduction design at six pumping station locations.

### **Senior Engineer, Field Investigation Manager and Lead Geotechnical Analyst**

**URS Corporation (AECOM)**

Sacramento, CA

Aug 2007 – Aug 2009

#### **Roles:**

- Preparing the subsurface investigation plan
- Preparing laboratory programs and coordination with laboratory
- Coordinating with subcontractors and providing feedback on laboratory program
- Coordinating with clients, field representatives and loggers, and CADD, GIS, and gINT teams
- Writing geotechnical reports (GDR, and GER) and technical memorandums
- Conducting business presentations and client interviews [e.g. independent technical reviews (ITR), independent consulting board (ICB), and department of water resources (DWR) ]
- Conducting and QC/QA geotechnical analyses: seepage, stability, and liquefaction
- Creating computational customized tools for underseepage evaluation and CPT-based liquefaction assessment
- Engagement in the preparation of company technical procedures and design protocol
- Collaborating with economists for cost/benefit studies

#### **Featured Project:**

Urban Levee Geotechnical Evaluations Contract 4600007418, San Joaquin Area Flood Control Agency (SJAFCA); San Joaquin County, CA; Department of Water Resources (DWR): DWR has identified approximately 72 miles of levees that protect the urban communities of San Joaquin County. URS provided overall coordination and management of the task, as well as the subsurface investigation of approximately 27 miles of levee on the Calaveras River, Stockton Diverting Canal, and Mormon Slough (Calaveras River System). The remaining alignment - 45 miles – are located along Bear Creek and Paddy Creek (Bear Creek System).

### **Staff Geotechnical Engineer II**

**CH2M HILL Inc. (Jacobs)**

Sacramento, CA

Apr 2006 – Jul 2007

#### **Roles:**

- Reviewing and providing geotechnical data, design recommendations
- Writing geotechnical reports (GDR, GBR, and GIR) and technical memorandums
- Preparation of field investigation work plans
- Preparation of laboratory testing programs
- Conducting geotechnical analyses
- Performing in-situ geotechnical evaluation and managing miscellaneous fieldwork

#### **Featured Project:**

South Fork Willow Creek Detention Basin (Colusa); The Colusa Basin Drainage District of Colusa County; Glenn County, California: The detention basin is designed to detain stormwater from upper Willow Creek which would be released after storm recede. The proposed earth dam was approximately 70-ft high including 10 ft of free board above the 100-year water surface elevation. The embankment cross section ranges from 200 to 550-ft wide at the bottom and up to 20-ft wide at the top. The total length of the embankment is roughly 600 ft. The detention basin would accommodate up to 5200 ac-ft of storage and would inundate approximately 305 ac during the 100-year storm.

**Roles:**

- Performing site investigation
- Estimating design parameters from field investigation data
- Providing geotechnical recommendations for telecommunication projects
- Writing geotechnical memorandums and reports

**Featured Project:**

EGSci Consulting Inc. provided exclusive geotechnical services for Morrison Hershfield Engineers, P.A. (MH). The services include geotechnical recommendations for existing and new telecommunication facilities in the southeast states – particularly Georgia, Florida, and North Carolina. Major beneficiaries and clients include Nextel Communications (Nextel), Cingular Wireless (CINGULAR), Bechtel Telecommunications, and Verizon Wireless (Verizon).

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**OTHER ACADEMIC & PROFESSIONAL ENGAGEMENTS**

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- **Chair** for the Civil Engineer Track - Industry-Academia Collaboration Conference 2014 and 2015
- **Editorial Board Member**
  - Geotechnical and Geological Engineering,
  - Transportation Research Record,
  - Journal of Civil Engineering and Environmental Sciences – Peertechz,
  - 14th Pan-American Conference on Soil Mechanics,
  - Geotechnical Engineering (PCSMGE) 2011 Conference, Toronto, Ontario, Canada.
- **Journal Reviewer**
  - Resources, Conservations, and Recycling,
  - Finite Elements in Analysis and Design,
  - Int J of Geosynthetics & Ground Engineering,
  - Multiscale and Multidisciplinary Modeling,
  - Arabian Journal of Geosciences,
  - International Journal of Geomate, Failure Analysis and Prevention.
- **Registered Member** (1992 - to date) - The Egyptian Engineers Syndicate
- **Former Member** (2000 - 2006) - Georgia Tech Geotechnical Society
- **Former Member and Editor**– (1996-1999) Construction Engineering Association (CEA), The American University in Cairo