Curriculum Vitae

Dr. Ghada S. Moussa, Ph.D.
Professor of Highway and Traffic Engineering,
Civil Department, Faculty of Engineering, Assiut University
Assiut, Egypt. Phone: +201117605780
Google Scholar: https://scholar.google.com/citations?user=WP4-aQYAAAAJ&hl=en
ResearchGate: https://www.researchgate.net/profile/Ghada-Moussa
Web of Science Researcher ID: AAL-6179-2020
ORCID: https://orcid.org/0000-0002-0842-5674
Scopus Author ID: 8966231600
E-mail: ghada.moussa@aun.edu.eg

EDUCATION

University of Central Florida (UCF), Orlando, Florida, U.S.A.
Ph.D. in Civil Engineering, Dec. 2006.
Major: Transportation Engineering,
Special emphasis on using augmented reality in studying left-turn maneuver at non-signalized intersection and horizontal visibility blockage.

University of Central Florida (UCF), Orlando, Florida, U.S.A.
M.S. in Civil Engineering, Dec. 2003.
Major: Structure and Foundation,
Special emphasis on using nonlinear finite element analysis to model and study FRP-reinforced concrete slabs.

Assiut University, Assiut, Egypt.
B.S. in Civil Engineering, May 2000.

MAIN RESEARCH INTERESTS

Pavement Materials Characterization, Pavement Performance, Traffic Data Analysis, Accident Analysis, Traffic Simulation, Machine Learning, Artificial Neural Networks, Deep Learning, Augmented Reality, Highway Safety.

WORK EXPERIENCE

11/2021 to present
Professor of Highway and Traffic Engineering, Civil Engineering Department, Faculty of Engineering, Assiut University, Egypt.

Director of the Highway and Airport Engineering Laboratory, Faculty of Engineering, Assiut University, Egypt.

6/2014 to 11/2021
Associate Professor, Civil Engineering Department, Faculty of Engineering, Assiut University, Egypt.

Director of the Highway and Airport Engineering Laboratory, Faculty of Engineering, Assiut University, Egypt.

1/2007 to 6/2014
Assistant Professor, Civil Engineering Department, Faculty of Engineering, Assiut University, Egypt.

1/2004 to 1/2007
Research Assistant (Ph.D. Student), Dept. of Civil and Environmental Engineering, University of Central Florida, FL., USA.

1/2002 to 1/2004
Research Assistant (MS Student), Dept. of Civil and Environmental Engineering, University of Central Florida, FL., USA.

9/2000 - 10/2001
Demonstrator in Civil Engineering Department, Faculty of Engineering, Assiut University, Egypt.

ACCOMPLISHED PROJECT

- Traffic Study for Assiut Barrage Project, Assiut, Egypt 2010.
- Establishing a Virtual Laboratories Developing Center (VLDC) (2007 to 2010),

Sponsor: Tempus 2007-2010.

- Establishing Augmented Reality Traffic Simulator, Sponsor: Florida CATSS, Florida, USA, 2004-2006.

- Parametric Study of Rapid-Deployable FRP Composite Bridge Deck Form Panels, Sponsor: UCF, Florida, USA, 2002-2004.

- Fiber-reinforced concrete pipe study, Sponsor: Hardie Pipe, Plant City, Florida, USA, 2003.

- Testing of fiber-reinforced concrete pipes and independent verification of tests, Sponsor: James Hardie Research Pty Ltd, Sydney, Australia, 2003.

- Vehicle collision with bridge piers, Sponsor: Florida DOT, USA, 2002.

AFFILIATIONS AND COMMITTEES

- Engineering Laboratories Committee, Faculty of Engineering, Assiut University, 2019-present.

- Permanent Committee for Studying the Integration of Different Means of Transportation in Assiut city, Egypt, 2018 - Present.

- Cultural Affairs Committee, Faculty of Engineering, Assiut University, 2015.

- Quality Assurance and Accreditation Committee, Faculty of Engineering, Assiut University, 2008, 2018.

- Center for Consultation and Engineering Studies, Faculty of Engineering, Assiut University, 2007- Present.

- American Computer Society, ACM, 2004.

- Institute of Transportation Engineers, ITE, 2004.

- Institute of Electrical and Electronics Engineers, IEEE, 2003.

- Chi Epsilon, Civil Engineering Honor Society, 2006.

- Muslim Student Association, MSA, at UCF, 2002.

- Syndicate Engineers, Egypt, 2000.

HONORS AND AWARDS

- Faculty of Engineering Distinguished Researcher Award, Assiut University, 2019.

- University of Central Florida Graduate Scholarship 01/02- 10/06

- Outstanding Academic Performance Grants throughout five years of undergraduate studies.

TEACHING EXPERIENCE

Teaching the following courses:

- Transportation Planning and Traffic Engineering (undergraduate course)

- Planning and Design of Transportation Infrastructure (undergraduate course)

- Maintenance of Transportation Networks (undergraduate course).

- Structural Analysis of Pavement (postgraduate course)

- Planning and Operation of Public Transportation (postgraduate course)

- Operations Research in the Field of Transportation (postgraduate course)

- Traffic Engineering (postgraduate course)

- Practical Applications in Traffic Engineering (postgraduate course)

- Computer Applications into Transportation and Traffic Engineering (postgraduate course)

- Highways, Traffic and Transportation planning (postgraduate course)

- Computer Applications into Highway Engineering (postgraduate course)

Supervising the following undergraduate projects

- Highway and Traffic Engineering

- Highway and Airport Engineering

- Transportation and Traffic Engineering

COMPUTER SKILLS

AutoCAD, Mathcad, VisualAnalysis.

PARAMICS: an advanced suite of high-performance software tools for microscopic traffic simulation.

WATSIM: wide-area microscopic traffic simulation software.

HCS: Highway Capacity Software for traffic analysis.

TEAPAC: a traffic analysis software

MINITAB, SPSS: statistical softwares.

DIANA: a powerful linear and non-linear FEA software.

LabVIEW: systems engineering software for applications that require test, measurement, and control with rapid access to hardware and data insights.

MATLAB: a programming and numeric computing platform

MAJOR PUBLICATIONS

[1] **GS. Moussa**, M. Owais, E. Dabbour, "Variance Based Global Sensitivity Analysis for Rear-end Crash Analysis Using Deep Learning", Accident Analysis & Prevention, Vol. 165, 2022.
https://doi.org/10.1016/j.aap.2021.106514

[2] T Abdel-Wahed, A Abdel-Raheem, **GS Moussa**, "Performance Evaluation of Asphalt Mixtures Modified with Nanomaterials", MEJ. Mansoura Engineering Journal, Vol.47, No. 1, 2022.
https://bfemu.journals.ekb.eg/article_221670.html

[3] AY Aboelmagd, S. Khedr, **GS. Moussa**, EM Abd Alla, M. Enieb, "Waste nanomaterial-modified asphalt for economic and sustainable pavement construction", Innovative Infrastructure Solutions, Vol.7, No.144 , 2022.
https://doi.org/10.1007/s41062-021-00737-0

[4] **GS. Moussa**, I. Sallam, H.Younis, "Performance Investigation Of Hot- And Warm-Asphalt Mixtures Modified With Superplast", JES. Journal of Engineering Sciences, Vol. 49, No.5, pp. 679-703, 2021.
https://doi.org/10.21608/jesaun.2021.82128.1060

[5] AY Aboelmagd**,** M Enieb, **GS Moussa**, S Khedr, ESM Abd Alla, "Predicted pavement Performance of Asphalt Paving Modified with High Content of Nanosilica Fume Based on Egyptian Conditions", 2nd International Conference on Civil Engineering: Recent Applications and Future Challenges (ICCE2021), 30 October – 2 November, Hurghada, Egypt, 2021.

[6] **G. Moussa**, M. Owais, "Modeling Hot-Mix asphalt dynamic modulus using deep residual neural Networks: Parametric and sensitivity analysis study", Construction and Building materials, Vol. 295, 2021.
https://doi.org/10.1016/j.conbuildmat.2021.123589

[7] AY Aboelmagd**, GS Moussa**, M Enieb, S Khedr, ESM Abd Alla, "Evaluation of Hot Mix Asphalt and Binder Performance Modified with High Content of Nano Silica Fume", JES. Journal of Engineering Sciences, Vol.49, No. 4, 2021.
https://doi.org/10.21608/jesaun.2021.70733.1046

[8] M Owais, AS Ahmed, **GS Moussa**, AA Khalil, "Integrating underground line design with existing public transportation systems to increase transit network connectivity: Case study in greater Cairo", Expert Systems with Applications, Vol. 167, 2021.
https://doi.org/10.1016/j.eswa.2020.114183

[9] **GS Moussa**, A Abdel-Raheem, T Abdel-Wahed, "Effect of Nanoclay Particles on the Performance of High- Density Polyethylene-Modified Asphalt Concrete Mixture", Polymers, Vol.13, No. 3, 434, 2021.
https://doi.org/10.3390/polym13030434

[10] **GS Moussa**, M Owais, "Pre-trained deep learning for hot-mix asphalt dynamic modulus prediction with laboratory effort reduction", Construction and Building Materials, Vol. 265, 2020.
https://doi.org/10.1016/j.conbuildmat.2020.120239

[11] M Owais, AS Ahmed, **GS Moussa**, AA Khalil, "Design scheme of multiple-subway lines for minimizing passengers transfers in mega-cities transit networks", International Journal of Rail Transportation, 1-24, 2020
https://doi.org/10.1080/23248378.2020.1846632

[12] **GS Moussa**, A Abdel-Raheem, T Abdel-Wahed, "Investigating the moisture susceptibility of asphalt mixtures modified with high-density polyethylene", JES. Journal of Engineering Sciences 48 (5), 765-782, 2020.
https://doi.org/10.21608/jesaun.2020.39052.1001

[13] M Owais, AS Ahmed, **GS Moussa**, AA Khalil, "An Optimal Metro Design for Transit Networks in Existing Square Cities Based on Non-Demand Criterion", Sustainability 12 (22), 9566, 2020.
https://doi.org/10.3390/su12229566

[14] M. Owais, **G. Moussa,** K. Hussain, "A Robust Deep Learning Architecture for Traffic Flow Estimation from a Subset of Link Sensors" ASCE's Journal of Transportation Engineering, Part A: Systems. Vol 146, No 1, 2020.
https://doi.org/10.1061/JTEPBS.0000290

[15] M. Owais, **G. Moussa,** K. Hussain, "Sensor location model for O/D estimation: Multi-criteria meta-heuristics approach", Operations Research Perspectives, Vol. 6, 2019.
https://doi.org/10.1016/j.orp.2019.100100

[16] K. Hussain, M. Afifi, **G. Moussa** "A Comprehensive Study of the Effect of Spatial Resolution and Color of Digital Images on Vehicle Classification" IEEE Transactions on Intelligent Transportation Systems, Vol. 20, No. 3, pp. 1181 - 1190, 2018.
https://doi.org/10.1109/TITS.2018.2838117

[17] K. Hussain**, G. Moussa** "On-Road Vehicle Classification Based on Random Neural Network and Bag-Of-Visual Words", Probability in the Engineering and Informational Sciences, Vol. 30, No. 3, pp. 403-412, 2016.
https://doi.org/10.1017/S0269964816000073

[18] M. Owais, M. Kamal, **G. Moussa,** "Multi-Objective Transit Route Network Design as Set Covering Problem", IEEE Transactions on Intelligent Transportation Systems, -Vol. 17, No. 3, pp. 670-679, 2016.
https://doi.org/10.1109/TITS.2015.2480885

[19] M. Owais, **G. Moussa**, Y. Abbas, and M. El-Shabrawy, "Simple and Effective Solution Methodology for Transit Network Design Problem", International Journal of Computer Applications Vol. 89, No. 14, 2014.
https://doi.org/10.5120/15702-4681

[20] **G. Moussa**, M. Owais, A Novel Solution Methodology for Transit route Network Design Problem", International Journal of Civil, Architectural Science and Engineering, Vol.8, No.3, pp. 605-610, 2014.
https://doi.org/10.5281/zenodo.1091496

[21] **G. Moussa**, "Vehicle Type Classification with Geometric and Appearance Attributes", International Journal of Civil, Architectural Science and Engineering, Vol.8, No.3, pp. 273-278, 2014.
https://doi.org/10.5281/zenodo.1091468

[22] M. Owais, **G. Moussa**, Y. Abbas, and M. El-Shabrawy, "Optimal Frequency Setting for Circular Bus Routes in Urban Areas", Vol. 41, No. 5, pp. 1796-1811, September 2013. (ISSN -1687-0530).
https://doi.org/10.21608/JESAUN.2013.114910

[23] K. Hussain, E. Radwan, **G. Moussa**, "Augmented Reality Experiment: Drivers' Behavior at an Unsignalized Intersection", IEEE Transactions on Intelligent Transportation Systems, Vol. 14, No. 2, pp. 608-617, 2013.
https://doi.org/10.1109/TITS.2012.2226239

[24] **G. Moussa**, E. Radwan, and K. Hussain, "Augmented Reality Vehicle System: Left-Turn Maneuver Stud", Transportation Research Part C: Emerging Technologies, Vol. 21, No. 1, pp.1-16, 2012.
https://doi.org/10.1016/j.trc.2011.08.005

[25] **G. Moussa** and K. Hussain, "A New Technique for Automatic Detection and Parameters Estimation of Pavement Crack", 4th International Multi-Conference on Engineering and Technological Innovation (IMETI 2011), Orlando, USA, on July 19th - 22nd, 2011.
http://www.iiis.org/CDs2011/CD2011SCI/IMETI_2011/PapersPdf/FA884ZF.pdf

[26] M. Owais, **G. Moussa**, Y. Abbas, and M. El-Shabrawy, "Optimal Circular Bus Routes Planning for Transit Network Design Problem in Urban Areas", Journal of Engineering Sciences, Assuit University, Egypt. Vol. 41, No. 4, pp.1447-1466, July 2013. (ISSN -1687-0530).
https://doi.org/10.21608/JESAUN.2013.114867

[27] M. Owais, **GS. Moussa**, M. Oneib, and Y. Abbas, "Evaluation and Analysis of Urban Passengers Transport Modes Operation Performance and Efficiency", Journal of Engineering Sciences, Assuit University, Egypt. Vol. 39, No. 2, pp. 283 -299, March 2011 . (ISSN -1687-0530).

https://doi.org/10.21608/jesaun.2010.112515

[28] E. Radwan, and **G. Moussa**, "Augmented Reality: How to Apply to Traffic Engineering Studies," Road Safety and Simulation RSS 2009, October 5–7, 2009, Paris, France.
https://doi.org/10.13140/2.1.1426.2084

[29] **G. Moussa** and K. Hussain, "Laser Intensity Automatic Vehicle Classification System," North American Travel Monitoring Exposition and Conference (NATMEC)", Washington, DC, USA, August 6-8, 2008.
http://www.trb.org/Conferences/2008/NATMEC/files/NATMEC.pdf.

[30] **G. Moussa**, K. Hussien, and E. Radwan, "Augmented Reality Applications to traffic Operations," Applications of Advanced Technology in Transportation pp.412-417, 2006. https://doi.org/10.1061/40799(213)65

[31] K. Hussain, S. Rajan, N. Addulla, and **G. Moussa** "No-Capture Hardware Feature For Securing Sensitive Information," IEEE International Conference on Information Technology: Coding and Computing, ITCC, Las Vegas, NV, USA, April 2005.
https://doi.org/10.1109/ITCC.2005.212

[32] K. Hussain and **G. Moussa**, "Automatic Vehicle Classification System using Range Sensor," IEEE International Conference on Information Technology: Coding and Computing, ITCC, Las Vegas, NV, USA, April 2005.
https://doi.org/10.1109/ITCC.2005.96

[33] K. Hussain, N. Addulla, S. Rajan, and **G. Moussa** , "Preventing The Capture Of Sensitive Information," 43rd annual ACM Southeast Conference, Kennesaw, GA, USA, March 2005.
https://doi.org/10.1145/1167253.1167291

[34] K. Hussain and **G. Moussa**, "Laser Intensity Vehicle Classification System Based On Random Neural Network," Proceedings of the 43rd annual ACM Southeast Conference, Kennesaw, GA, USA, March 2005.
https://doi.org/10.1145/1167350.1167372

[35] **G. Moussa** and L. Zhao, "Steel-Free FRP Composite Deck System," International Association of Bridge and Structural Engineering (IABSE) Symposium, Shanghai, China, Sep. 22-24, 2004.
https://doi.org/10.2749/222137804796302400