

# Hoda Talaat, Ph.D.

Associate Professor  
Faculty of Engineering  
Cairo University

[hoda.talaat@gmail.com](mailto:hoda.talaat@gmail.com)

[hoda.talaat@eng.cu.edu.eg](mailto:hoda.talaat@eng.cu.edu.eg)

## BIOGRAPHY

- > Associate Professor, Public Works Dept., Faculty of Engineering, Cairo University.
- > Program Coordinator, CIE Program, Faculty of Engineering, Cairo University.
- > Former Director of ITS program, Nile University.
- > Recipient of several prestigious awards From Egyptian and Canadian Institutions and universities.
- > Publication record of 20 papers.

## BIOGRAPHY

Dr. Talaat is a transportation engineering professional with around 20 years of academic and practical experience in the field of transportation and highways engineering and technologies. The bulk of this expertise was accumulated working on diverse projects in Canada and the Middle East.

Dr. Talaat is currently serving as an Associate Professor at Cairo University, Egypt. She also serves as the coordinator of the Civil Infrastructure Engineering CIE Program at Cairo University, responsible for overall academic admiration of the program. She is the former Director of the Intelligent Transportation Systems ITS program at Nile University Egypt.

She currently serves as a member of the Egyptian National Road Safety Council and a former member of the Transportation Research Council of the Academy of Scientific Research and Technologies.

Dr. Talaat has led several consultancy services and research projects in Highways design, Transportation Systems modeling/design, and Intelligent Transportation Systems (ITS) technologies/deployments. Example projects includes; pavement design for highways and dry ports, highways design consistency, advanced traffic management and information systems, traffic monitoring and surveillance systems, intelligent commercial vehicle operations, pedestrian modelling and evacuation, economic costs of traffic congestion, and traffic -related air quality impacts.

Dr. Talaat has participated in teaching several undergraduate and graduate courses in the general domain of Transportation and Highway engineering and in the specific field of ITS at Cairo University, Nile University, German University in Cairo, and University of Toronto.

Dr. Talaat is the recipient of several prestigious awards from organizations like ITS Canada, Transportation Association of Canada, and National Science and Engineering Research Council of Canada for her work. She obtained her PhD from the University of Toronto in 2008.

She has several publications related to ITS technologies and applications, traffic system modeling, driver behavior, traffic-related air quality impacts, and pavement design.

## EDUCATION

- > Ph.D. University of Toronto, 2008.
- > M.Sc. Cairo University, 2003.
- > B.Sc. Cairo University, 2000.

## EDUCATION

University of Toronto, Toronto, Canada 2008.  
Ph.D. Transportation Engineering – Intelligent Transportation Systems.

Thesis: “Decision Field Theoretical Analysis and Modeling of Dynamic Route Choice Deliberation Process”.

Cairo University, Cairo, Egypt 2003.

M.Sc. Honors in Highways Engineering.

Thesis: “Application of Artificial Neural Networks in Pavement Design”.

Cairo University, Cairo, Egypt 2000.

B.Sc. Honors in Civil Engineering.

## AWARDS

- > 7 merit-based awards from Canadian and Egyptian Institutions and Universities.

## AWARDS

National Science and Engineering Research Council of Canada Post Graduate Scholarship (2005-2007). Merit-based scholarship awarded by the Federal Government to high caliber scholars engaged in doctoral research in the natural sciences or engineering.

Chair's Award for Excellence in Graduate Studies, Department of Civil Engineering, University of Toronto (2006-2007).

Transportation Association of Canada - Dr. A.T. Bergan / IRD Scholarship (2005).

Ontario Graduate Scholarship in Science and Technology (2004). Merit-based scholarship award by the Government of Ontario to encourage excellence in graduate studies.

ITS Canada Michel Van Aerde Memorial Scholarship (2004). Annual scholarship by ITS Canada to encourage graduate studies in the field of intelligent transportation systems and commemorate the contribution that Dr. Michel Van Aerde made to the ITS industry.

University of Toronto Open Fellowship (2003). Merit-based scholarship awarded by the University of Toronto to outstanding graduate students.

Egyptian Engineers Syndicate Award, Cairo University (2000). An annual award by the Egyptian Engineers Syndicate for Outstanding Academic Achievement.

Reda Hamza Award for Outstanding Academic Achievement, Cairo University (1998). An annual award to top ranking students.

## EMPLOYMENT

*(current)*

- > Associate Professor, Faculty of Engineering, Cairo University.
- > Highways and Transportation Systems Expert, Talaat-Imam Consulting Engineers and Sets International.

## EMPLOYMENT

Associate Professor, Highways, Traffic, and Airports Engineering, Faculty of Engineering, Cairo University (July 2015 – Present).

Highways and Transportation Systems Expert, Talaat-Imam Consulting Engineers, Cairo, Egypt (September 2008 – Present).

Highways and Transportation Systems Expert, Sets International, Cairo, Egypt (September 2016 – Present).

Director, Intelligent Transportation Systems Program, Nile University (September 2008 – 2011).

Assistant Professor, Highways, Traffic, and Airports Engineering, Faculty of Engineering, Cairo University (September 2008 – 2015).

Research Assistant, ITS Centre & Testbed – University of Toronto (2003 - 2008).

Teaching Assistant, Department of Civil Engineering – University of Toronto (2003 - 2008).

Teaching Assistant, Highways, Traffic, and Airports Engineering, Faculty of Engineering, Cairo University (2000 - 2003).

## TEACHING EXPERIENCE

- > Instructor for 7 undergraduate and graduate courses at Cairo University, German University in Cairo, Nile University, and University of Toronto.

## TEACHING EXPERIENCE

PBW301: Transportation Planning and Traffic Engineering, Cairo University, Egypt, (2008 – 2019).

PBWN301: Highways Engineering, Cairo University, Egypt, (2017-2019)

PBW444: Highways and Airports Engineering (2), Cairo University, Egypt (2015 - 2019).

PBW641: Traffic Flow Characteristics, Cairo University, Egypt, (2014-2019).

CIT903: Intelligent Transportation Systems 1, German University in Cairo, Egypt, (2016).

CIV1504: Applied Probability and Statistics in Civil Engineering, University of Toronto, Canada, (2014).

ITS501: Traffic Engineering, Nile University, Egypt, (2011)

## ADMINISTRATIVE EXPERIENCE

- > Program Coordinator/Director at Cairo University and Nile University

## ADMINISTRATIVE EXPERIENCE

Program Coordinator, Civil Infrastructure Engineering CIE, Credit Hours Programs, Faculty of Engineering, Cairo University. (2018 – current).

Executive Committee Member, Credit Hours Program Executive Committee, Faculty of Engineering, Cairo University. (2018 – current).

Director, Intelligent Transportation Systems Program, Nile University, Egypt, (2008-2011).

## FUNDED RESEARCH PROJECTS

- > Funded research projects by IDRC, ITIDA, CANARIE, NU-ITS Center.

## FUNDED RESEARCH PROJECTS

Mobile Monitoring of Black Carbon in Greater Cairo and development of exposure surfaces reflecting Traffic related air pollution.

Funded by: International Development Research Center IDRC, Canada.

Role: Co-PI

TraffiSense: An Integrated Visual Sensing System for Advanced Traffic Management – Phase 1.

Funded by: Information Technology Industry Development Agency ITIDA, Egypt.

Role: Co-PI

TraffiSense: An Integrated Visual Sensing System for Advanced Traffic Management – Phase 2.

Funded by: Academy of Scientific Research and Technology ASRT, Egypt.

Role: Co-PI

Online Network Enabled Intelligent Transportation Systems ONE-ITS

Funded: CANARIE, Canada.

Role: Board member

Intelligent Travel Survey methods via 2G-3G Cellular Networks.

Funded by: Center of Intelligent Transportation systems - Nile University

Role: PI

The 26<sup>th</sup> of July Travel Corridor: a simulation based assessment.

Funded by: Center of Intelligent Transportation systems - Nile University.

Role: PI

## FUNDED RESEARCH PROJECTS

- > Funded research projects by IDRC, ITIDA, CANARIE, NU-ITS Center

Intelligent Geographic Information System for Commercial Vehicle Routing IGIS-VR.  
Funded by: Center of Intelligent Transportation systems - Nile University  
Role: PI

Microsimulation-based evaluation of U-turns at Cairo's major Intersections.  
Funded by: Center of Intelligent Transportation systems - Nile University.  
Role: PI

## GRADUATE STUDENT SUPERVISION

- > Supervised more than 10 graduate students working on various fields of transportation and highways engineering.

## GRADUATE STUDENT SUPERVISION

Mona Abdullah  
Degree: MSc, Highways and Traffic Engineering, Cairo University, 2019.  
Research Topic: A simulation-based evaluation of BRT systems on over-crowded travel corridors.

Ahmed Bayoumi  
Degree: MSc, Highways and Traffic Engineering, Cairo University, 2019.  
Research Topic: Real-Time Traffic Flow Estimation Based on Open Source Travel Time Data

Yarah Basyouni  
Degree: PhD, Transportation Engineering, German University in Cairo, 2018.  
Research Topic: Real-Time Travel Speed Prediction Via Mobile Sensors

Hossam Said  
Degree: MSc, Highways and Traffic Engineering, Cairo University, 2017.  
Research Topic: A Bi-level Approach for Calibrating a Traffic Simulation Model of Greater Cairo Region.

Mahmoud Sarhan  
Degree: PhD, Highways and Traffic Engineering, Cairo University, 2014.  
Research Topic: Estimation of road capacity of weaving sections at urban arterials.

Akram Sabry  
Degree: MSc, Intelligent Transportation Systems. Nile University. 2014.  
Research Topic: Factors impacting link travel speed reliability: a case study of Cairo, Egypt.

## GRADUATE STUDENT SUPERVISION

- > Supervised 10 graduate students working on various fields of transportation and highways engineering.

Yarah Basiouny

Degree: MSc, Intelligent Transportation Systems. Nile University. 2012.

Research Topic: A Bi-level Traffic Data Extraction Procedure via Cellular Phone Network for Intra-city Travel

Ahmed Hussein

Degree: MSc, Highways and Traffic Engineering. Cairo University. 2011.

Research Topic: Developing a Pedestrian Evacuation Planning Tool for Limited Access Sites Using Evolutionary Algorithms

Toka Sabry

Degree: MSc, Intelligent Transportation Systems. Nile University. 2010.

Research Topic: Intelligent Geographic Information System for Commercial Vehicle Routing

Tamer ElAzony

Degree: MSc, Intelligent Transportation Systems. Nile University. 2010.

Research Topic: Selection Criteria for at-grade Intersection Treatments: Simulation-based Assessment in Cairo Urban Corridors.

## CONSULTANCY EXPERIENCE

- > Led several projects, clients include: Ministry of Transportation, Ministry of Environmental Affairs, Ministry of Housing, UN-Habitat, World Bank, French Development Agency, Riyadh Development Authority, and several Developers.

## CONSULTANCY EXPERIENCE

**El-Monieb Transport Hub.** The General Authority of Urban planning is commencing on the redevelopment of El-Monieb area in the southern part of Giza Governate at the vicinity of the River Nile and Cairo's Ring Road. The area witnesses excessive public transit and traffic operations. The project aims to develop a conceptual design for a multimodal transport hub in addition to the redevelopment of the roadway network infrastructure within the study area.

**Downtown Cairo Transportation Improvement Plan.** UN Habitat in partnership with Cairo Governorate, is planning to commence the implementation of the first (pilot) phase of a public bicycle sharing system in central Cairo; known as the "Bike Sharing: Innovative Mobility for All" project. The project is aimed to introduce a green travel mode that enhances accessibility at the heart of Cairo, promotes balanced transport landscape, and caters the evolving youth and gender inclusion policies. At the same time Cairo Governorate is considering widening sidewalks, dedicating certain streets to pedestrians only corridors to further

## CONSULTANCY EXPERIENCE

- > Led several projects, clients include: Ministry of Transportation, Ministry of Environmental Affairs, UN-Habitat, World Bank, French Development Agency, Riyadh Development Authority, and several Developers.

harness sustainable pedestrian friendly downtown.

**Traffic Impact Study for Bike-lanes in Downtown Cairo-Sponsored by UN-Habitat.** The project aims to assess the impact of dedicated Bike-lanes in downtown Cairo on traffic operations and propose mitigation measures.

**6th of October Dry Port Design.** A full design project for a dry port in 6<sup>th</sup> of October city, which includes pavement design for various area types.

**Estimation and Modeling of Factors Governing Emissions of CO<sub>2</sub> and other Air Pollutants from Medium/Heavy Trucks in Cairo – Sponsored by AFD .** The project aims to assess and model emissions from medium and heavy trucks inside the Greater Cairo Region.

**Estimation and Modeling of Factors Governing Emissions of CO<sub>2</sub> and other Air Pollutants from the Public Transit Modes in Cairo – Sponsored by AFD.** The project aims to assess and model emissions from Public Transit (PT) vehicles inside the Greater Cairo Region.

**Developing air Quality Heat map for Cairo.** The project aims at harnessing the power of mobile sensors and advances in technology to create informative air quality mapping of Cairo.

**Detailed Design and Tender Documents Preparation for Thumamah Road Corridor Western Section.** Arriyadh Development Authority intends to upgrade the Thumamah Road from its current status, as a “major arterial” in the City, to an “urban freeway” standards, in line with the recommendations of the Metropolitan Development Strategy for Arriyadh.

**Cairo Congestion Study Phase 1 – Sponsored by the World Bank.** The study is conducted to assess the baseline economic cost of current road traffic congestion in the Greater Cairo Metropolitan Area (GCMA), based on which to prepare policy recommendations and an action plan to reduce traffic congestion..

**Support to the Reform of the Egyptian transport sector – Europe Aid/129110/SER /C/E.** The overarching objective of this project is to provide support to the Ministry of Transport of the Arab Republic of Egypt in its endeavor to reform the Transport sector including all modes of transport as well as cross-cutting issues. Served as a steering committee member.

## CONSULTANCY EXPERIENCE

**Internal Roadway Network Design for SKYWALK project– Cairo/Alexandria Dessert Road.** SKYWALK is a high-end residential, entertainment and shopping compound that is planned to be developed at the critical location of the intersection of the Cairo/Alexandria Highway and a major urban highway in western Cairo.

**Several Traffic Impact, parking, and signage studies for different major development.** Developments include Mall of Egypt, Almaza mall, El-Boroges, Skywalk, El-wafaa and Elamal dump site regeneration.

## PUBLICATIONS

- > 20 publications in renowned international journals and conference proceedings.

## PUBLICATIONS

Bayoumi, A., Talaat, H., and Hozayen, H. (in progress). "Real Time Traffic Flow Estimation Based on Open Source Travel Time Data". IET journal of ITS.

Abdullah, M., Mitiny, N., and Talaat, H. (in progress). "Simulation-based Assessment of BRT systems in overcrowded Travel Corridors". Journal of Advanced Transportation Studies.

Talaat, H., Abdelgawad, H., and Hatzopoulou M. (2019). "Mobile Monitoring of Black Carbon Levels in Greater Cairo Metropolitan and development of Exposure Surfaces reflecting traffic-related Air Pollution". Proceedings of the 98<sup>th</sup> annual Transportation Research Board meeting, TRB, Washington D.C. 2019.

Talaat, H., Abdelgawad, H., and Mourad, M. (2019). "Estimation and Modeling of Emissions Factors from Public Transport Modes in Cairo". Proceedings of the 98<sup>th</sup> annual Transportation Research Board meeting, TRB, Washington D.C. 2019.

Basyouni, Y., Abass, H., Talaat, H., and ElDimery, I. (2017). "Speed Prediction from Cellular Phone Based Traffic Data". IET journal of ITS, vol 11, n0. 7, pp. 387-396, 2017.

Basyouni, Y., Talaat, H. (2016). "Traffic states spatiotemporal data expansion using Bayesian networks models" Proceedings of 11th ITS European Congress, Glasgow, Scotland, 6-9 June 2016.

## PUBLICATIONS

- > 20 publications in renowned international journals and conference proceedings.

Akram S., Talaat, H. (2015). "Factors Impacting Link Travel Speed reliability: A case study of Cairo, Egypt". Journal of traffic and logistics Engineering 2015.

Moustafa, T., and Talaat, H. (2015). "Intelligent Geographical Information System for Commercial Vehicle Routing (IGIS-VR): A Simulation Base Evaluation Model". Journal of traffic and logistics Engineering.

Sarhan, M., Talaat, H, and Mousa, R. (2015). "Estimation of Road Capacity at Weaving Sections on Urban Arterials". Proceedings of the 94th Transportation Research Board annual meeting, Washington D.C.

Basyoni, Y., and Talaat, H. (2014). "A Bi-level Traffic Data Extraction Procedure via Cellular Phone Network for Inter-city Travel". In press. Journal of Intelligent Transportation Systems.

Hussein, A., and Talaat, H. (2013). "Developing a Pedestrian Evacuation Planning Tool for Limited Access Sites Using Evolutionary Algorithms". 13th World Congress on Transportation Research WCTR, July 15- 18, Rio.

Talaat, H., and Abdulhai, B. (2011). "Drivers Route Choice Behavior: a mixed-reality application". Proceedings of the 90th Annual Meeting of the Transportation Research Board, TRB, Washington D.C.

EIAzzony, T., Mosa, A., and Talaat, H. (2011). "At-Grade Intersection Treatment Selection Criteria — Simulation Based Experimental Analysis". Proceedings of the 90th Annual Meeting of the Transportation Research Board, TRB, Washington D.C.

Mostafa, T., and Talaat, H. (2010)." An Intelligent Geographical Information System for Vehicle Routing (IGIS-VR): A Modeling Framework". Proceedings of the 13th International IEEE Conference on Intelligent Transportation Systems, Madeira Island, Portugal.

EIAzzony, T., Talaat, H., and Mosa, A. (2010)." Microsimulation Approach to evaluate the use of restricted lefts/through u-turns at major intersections – a case study of Cairo-Egypt urban corridor". Proceedings of the 13th International IEEE Conference on Intelligent Transportation Systems, Madeira Island, Portugal.

## PUBLICATIONS

- > 20 publications in renowned international journals and conference proceedings.

Talaat, H., Masoud, M., and Abdulhai, B. (2008). "A Simple Mixed Reality Infrastructure for Experimental Analysis of Route Choice Behavior under ITS Applications". Transportation Research Record, TRR, Journal of the Transportation Research Board.

Masoud, M., Talaat, H., and Abdulhai, B. (2008). "Developing a Simple Mixed Reality System for Traffic Analysis". 10th international conference on Applications of Advanced Technologies on Transportation, AATT, Athens, May 2008.

Talaat, H. & Abdulhai, B. (2006). "Modeling Driver Psychological Deliberation during Dynamic Route Selection Processes", 9th IEEE conference on Intelligent Transportation Systems, Sept 2006.

Talaat, H. & Abdulhai, B. (2004). "Modeling Drivers' Choice Behavior: Challenges and Future Needs", 33rd Canadian Society of Civil Engineers CSCE annual conference, June 2004.

Talaat, H., Sharaf, E., Osman, O. (2004). "Non-AASHTO Based Pavement Design Tool Using Artificial Neural Networks for developing Countries", Proceedings of 33rd CSCE annual conference, June 2004.