

# Antonis F. Lentzakis

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## Education

Nanyang Technological University Singapore South West, Singapore

PhD Degree from the school of EEE  
July 2018

Thesis title: Region-based Urban Traffic Management

Thesis advisors: Assoc. Prof. Rong Su (supervisor), Prof. Changyun Wen (co-supervisor)

Technical University of Crete Chania, Greece

Master's Degree in Operations Research  
February 2009

Thesis title: Off-line Application of the Motorway Traffic Surveillance Tool  
RENAISSANCE to a Motorway Network around Antwerp, Belgium

Thesis advisor: Markos Papageorgiou (supervisor)

Technical University of Crete Chania, Greece

Diploma in Production Engineering & Management (equivalent to BSc & MSc)  
October 2006

Thesis title: Comparison of Lagrangean Relaxation Algorithms applied to  
a single constraint Quadratic Knapsack Problem subject to lower bounds

Thesis advisor: Athanasios Migdalas (supervisor)

## Research Interests

Traffic modeling and simulation, transportation systems analysis, traffic management system optimization

## Research and Work Experience

Postdoctoral Research Associate in SMART-FM IRG November 2018 – Present

Research Associate in NTU-NXP project December 2017 – November 2018

Participation in NTU-NXP Smart Mobility project supported by the Singapore Economic Development Board, responsible for developing a Route Planning module for a Smart Mobility Test Bed

Research Associate in ANTREOFF project January 2008 – February 2009

Participation in project ANTREOFF funded by the European Union which implemented an off-line application of the motorway traffic surveillance tool RENAISSANCE to a motorway network around Antwerp, Belgium

Research Associate in EPEAEK II project

January 2008 – August 2008

Participation in project EPEAEK II financed by the Technical University of Crete and the Greek Ministry of Education which implemented a restructuring of the undergraduate study programme using genetic and evolutionary algorithms

RoboCup Team “Kouretes”

January 2007 – July 2007

Member of the Technical University of Crete RoboCup team

Professional Mechanical Engineer

December 2006 – 2012

Member of the Technical Chamber of Greece (TEE). Implementation of technical reports (electrical, HVAC) in Rethymno, Greece

#### Publications / Technical Reports

- “*Affinity Matrix Learning through Subspace Clustering for Tolling Zone Definition*”, Lentzakis, A.F., Seshadri, R. and Ben-Akiva, M., Submitted to the 7th International IEEE Conference on Models and Technologies for Intelligent Transportation Systems
- “*Network and Energy Impacts of Automated Mobility-On-Demand: A Study in Singapore*”, Oh S., Lentzakis, A.F., Seshadri, R. and Ben-Akiva, M., Under review in Simulation Modelling Practice and Theory
- “*Hierarchical density-based clustering methods for tolling zone definition and their impact on distance-based toll optimization*”, Lentzakis, A.F., Seshadri, R., Akkinapally A.P., Vu, V. and Ben-Akiva, M., Accepted in Transportation Research Part C: Emerging Technologies
- “*Feature-variant clustering methods for tolling zone definition and their impact on distance-based toll optimization*”, Lentzakis A.F., Seshadri R., Akkinapally A.P., Vu V. and Ben-Akiva M., Transportation Research Board 99th Annual Meeting, Washington, DC, 2020
- “*A Simulation Modeling Framework with Autonomous Vehicle Region-based Routing and Public Transit Diversion Integration*”, Simon I. Ware, Antonis F. Lentzakis, Rong Su, in 22<sup>nd</sup> IEEE Intelligent Transportation Systems Conference (ITSC 2019), Auckland, NZ, October 2019
- “*Predictive Distance-based Toll Optimization Under Varying Demand Levels*”, Vu, V., Lentzakis, A.F., Seshadri, R., Tan, G., Ben-Akiva, M., 26th ITS World Congress, Singapore, October 2019
- “*Region-based prescriptive route guidance for travellers of multiple classes*”, Lentzakis, A.F., Ware, S.I., Su R. and Wen C., Transportation Research Part C: Emerging Technologies Vol. 87 (2018), pp. 138-158
- “*Jaya, WCA and HS methods for solving large-scale real-life urban traffic light scheduling problem*”, Gao, K., Sadollah, A., Zhang, Y., Lentzakis, A.F., Su, R., Swarm and Evolutionary Computation Vol. 37, (2017), pp. 58-72.
- “*Region-based dynamic forecast routing for autonomous vehicles*”, Antonis F. Lentzakis, Simon I. Ware, Rong Su, in 19<sup>th</sup> IEEE Intelligent Transportation Systems Conference (ITSC 2016), Rio de Janeiro, Brazil, November 2016
- “*Strategic Learning approach to Region-based Dynamic Route Guidance*”, Antonis F. Lentzakis, Rong Su, Changyun Wen, in 12<sup>th</sup> IEEE International Conference on Control and Automation (ICCA 2016), Kathmandu, Nepal, June 2016
- “*Discrete Harmony Search Algorithm for Solving Urban Traffic Light Scheduling*

- Problem*”, Kaizhou Gao, Yicheng Zhang, Rong Su, Antonis F. Lentzakis, IEEE proceedings of 2016 American Control Conference (ACC 2016), Boston, USA, July 2016
- *“Time-dependent Partitioning of Urban Traffic Network into Homogeneous Regions”*, Antonis F. Lentzakis, Rong Su, Changyun Wen, in 13th International Conference on Control, Automation, Robotics and Vision (ICARCV 2014), pp. elec-proc. 2014.
  - *“Real-time merging traffic control with applications to toll plaza and work zone management”*, Markos Papageorgiou, Ioannis Papamichail, Anastasia Dimitriou Spiliopoulou and Antonis Fanouriou Lentzakis, in Modélisation du Trafic – Actes du Groupe de Travail 2007, Actes INRETS No. 123, Paris, France, 2009, pp. 101-128
  - *“Off-line Application of the Motorway Traffic Surveillance Tool RENAISSANCE to the Motorway Network Around Antwerp”*, C.M.J. Tampère, A.F. Lentzakis, M. Papageorgiou & I. Papamichail, Report for Ministerie van het Vlaams Gewest, Department Mobiliteit en Openbare Werken, Vlaams Verkeerscentrum, Belgium, February 2009
  - *“Real-time merging traffic control with applications to toll plaza and work zone management”*, Papageorgiou M., Papamichail I., Spiliopoulou A.D. and Lentzakis A.F., Transportation Research Part C: Emerging Technologies, Vol. 16, 5 (2008), pp. 535-553
  - *“Real-Time Work Zone Management for Throughput Maximization”*, Lentzakis A. F., Spiliopoulou A. D., Papamichail I., Papageorgiou M. and Wang Y., Proceedings of the Transportation Research Board 87th Annual Meeting (Paper CD-ROM), Washington, DC, 2008.

#### Invited Talks

- Predictive Distance-based Toll Optimization, TS 42: Road pricing as an effective tool to manage travel demand, 26<sup>th</sup> ITS World Congress, Singapore, October 2019
- Feature-variant clustering methods for tolling zone definition and their impact on distance-based toll optimization, Future Urban Mobility IRG Lunch Seminar, SMART, Singapore, October 2019
- Real-time Predictive Toll Optimization, Session 3: Real Time Mobility Control Strategies, SMART Future Urban Mobility Symposium, Singapore, January 2019
- Time-dependent Partitioning of Urban Traffic Network into Homogeneous Regions, Dynamic Systems and Simulation Laboratory, Technical University of Crete, Greece, July 2014
- Application of the Motorway Traffic Surveillance Tool RENAISSANCE to a Motorway Network Around Antwerp: Preliminary Results, Vlaams Verkeerscentrum, Belgium, April 2008

#### Participations

#### Competitions

- 2<sup>nd</sup> Place in international MSRS Simulation Challenge in RoboCup 2007, as part of the T.U.C. Kouretes Four-Legged Simulation Team, Atlanta, U.S.A., July 2007

#### Meetings / Seminars

- Participation to the Winter School on Intelligent Transportation, co-sponsored by Centre of INFINITUS, SMEL@NTU, and IEEE CSS Technical Committee on Smart Cities, in conjunction with NTU-NXP Smart Mobility Test Bed Industry Partnership Showcase 2017, Nanyang Technological University, on January 2017 which took place in Singapore.
- Participation to the kick-off meeting of action TU0702 of the COST project titled “Real-time Monitoring, Surveillance and Control of Road Networks under Adverse Weather Conditions” on April 2008 which took place in Brussels, Belgium.

## Computer Skills

### Programming Languages:

High Expertise: C, C++, MATLAB, Python

Medium Expertise: C#, FORTRAN

### Operating Systems:

GNU/Linux, Windows

### Software Applications:

DynaMIT2.0 traffic surveillance, estimation, prediction and control system, SimMobility ST (Short-Term) agent-based microscopic simulation software, Aimsun microscopic simulation software, PTV Vissim microscopic simulation software, FET timetabling software, ESRI ArcView GIS, GNUplot function and data plotting software, PTC Pro/Engineer CAD software

## Language Skills

- Greek

Mother tongue

- English

Proficiency in English by University of Cambridge

- German

Goethe Institute Mittelstufe Certificate

## Hobbies and Activities

Fair knowledge of French (written and oral)

Amateur musician (a Greek traditional instrument named 'Cretan Lyra')

Amateur Weiqi/Go player, Swimming, Running, Judo, Rubik's Cube Enthusiast

## Personal Information

Marital Status: Married

Military Obligations: Complete

## References

Available upon request