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**DIMITRA MICHALAKA, Ph.D., P.E.**

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## **EDUCATION**

**Ph.D. in Civil Engineering**, focus on Transportation Engineering (August 2012)

University of Florida, Gainesville, FL, USA.

*Dissertation*: “Enhancement and Evaluation of Dynamic Pricing Strategies of Managed Toll Lanes”

*Chair*: Dr. Yafeng Yin

**M.S. in Civil Engineering**, focus on Transportation Engineering (May 2009)

University of Florida, Gainesville, FL, USA

*Thesis*: “Proactive and Robust Dynamic Pricing Strategies for High Occupancy/Toll Lanes”

*Chair*: Dr. Yafeng Yin

**Diploma in Civil Engineering** (five-year undergraduate program) (November 2006)

National Technical University of Athens, Athens, Greece

*Thesis*: “Characteristics and number of transfers between urban transport modes: Analysis using Poisson regression”

*Chair*: Dr. Matthew Karlaftis

## **PROFESSIONAL CERTIFICATION**

**Licensed Professional Engineer**, State of South Carolina (since December 2016)

## **EMPLOYMENT HISTORY**

**Assistant Professor** (January 2014 to present)

Department of Civil and Environmental Engineering, The Citadel, Charleston, SC, USA.

**Adjunct Lecturer/ Postdoc Researcher** (August 2012 to December 2013)

Department of Civil and Coastal Engineering and Department of Urban and Regional Planning, University of Florida, Gainesville, FL, USA.

**Graduate Research Assistant** (January 2010 to August 2012)

Department of Civil and Coastal Engineering, University of Florida, Gainesville, FL, USA.

**Transportation Engineer** (June 2009 to December 2009)

Transportation Research Center, CMS.

Department of Civil and Coastal Engineering, University of Florida, Gainesville FL, USA.

**Graduate Research Assistant** (August 2007 to May 2009)

Department of Civil and Coastal Engineering, University of Florida, Gainesville, FL, USA.

**Research Assistant** (November 2006 to June 2007)

School of Civil Engineering, National Technical University of Athens, Greece.

**Transportation Engineer** (November 2006, April 2006 to May 2006, November 2005)

Trademco S. A., Athens, Greece.

**Intern** (July 2005 to August 2005)

Public Power Corporation of Greece, Islands Region Department, Athens, Greece.

## **RESEARCH EXPERIENCE**

**Assistant Professor** (January 2014 to present)

Department of Civil and Environmental Engineering, The Citadel, Charleston, SC, USA.

- Principal Investigator, “Engineering Education”.

- Examine how to use different learning techniques to enhance student learning and motivation. (on-going)
- Examine how to enhance students' teamwork skills. (on-going)
- Study how small teaching changes can lead to great improvements. (on-going)
- Principal Investigator, "Mini-roundabouts", sponsored by The Citadel.
  - Study mini-roundabouts and identify locations where mini-roundabouts can be implemented in S.C. (on-going)
- Principal Investigator, "Navigation of Pedestrians and Bicycles at Roundabouts and its Impact to Vehicular Capacity", sponsored by The Citadel.
  - Examine how pedestrians and bicyclists navigate through roundabouts, and how the movement of pedestrians and bicycles influence the capacity and throughput of vehicle traffic at roundabouts. The research will involve data collection at selected roundabouts in Charleston, SC area. (on-going)
- Researcher, "Roundabouts and Access Management", sponsored by The Citadel.
  - Conduct an operational analysis of selected roundabouts in Charleston, SC area. The operational analysis will examine how roundabouts perform relatively to other types of un-signalized intersections and how they can enhance access management located in their vicinity. (completed)
- Researcher, "Roundabouts and Access Management", sponsored by the Florida Department of Transportation (FDOT). (completed)
  - Worked towards achieving the project goal which was to review literature on roundabouts and their application throughout the United States (U.S.) to understand how access management, capacity, and safety are addressed, and to recommend changes in guidance documents in Florida including the access management resources, Median Handbook, and Driveway Information Guide.
- Researcher, "Deployment Strategies of Managed Lanes on Arterials", sponsored by FDOT. (completed)
  - Identify the types of managed lanes and their variants with potentials for managing traffic along arterials in Florida.
- Advisor of undergraduate students

**Adjunct Lecturer/ Postdoc Researcher** (August 2012 to December 2013)

Department of Civil and Coastal Engineering and Department of Urban and Regional Planning, University of Florida, Gainesville, FL, USA.

- Researcher, "Roundabouts and Access Management", sponsored by the Florida Department of Transportation (FDOT).
  - Worked towards achieving the project goal which is to review literature on roundabouts and their application throughout the United States (U.S.) to understand how access management, capacity, and safety are addressed, and to recommend changes in guidance documents in Florida including the access management resources, Median Handbook, and Driveway Information Guide.
- Researcher, "Deployment Strategies of Managed Lanes on Arterials", sponsored by FDOT.
  - Identified the types of managed lanes and their variants with potentials for managing traffic along arterials in Florida.
- Researcher, "Central Data Warehouse (CDW) Enhancements Part 3", sponsored by FDOT and the Center of Multimodal Solutions for Congestion Mitigation (CMS), University of Florida.
  - Analyzed traffic data and identified detectors that provide erroneous data.

- Worked with the SunGuide transportation management centers (TMCs) and FDOT offices to recalibrate inaccurate detectors.
- Researcher and project manager, “Florida Minority Occupant Protection Task Force”, sponsored by the U.S. DOT.
  - Worked towards achieving the project goal which was to increase the safety belt use with the African American and Hispanic communities in the City of Jacksonville, FL. Project tasks I was involved included but were not limited to: identification and selection of promotional and educational materials, distribution of the materials, and use of statistical analysis to examine the results from the Pre and Post Safety Belt Observational surveys and identify the increase of safety belt use with the African American and Hispanic communities.
- Professional Workshop Developer, “Managed Lane Operations-Adjusted Time of Day Pricing vs. Near Real Time Dynamic Pricing” workshop series.
  - Developed and delivered a two-part training on managed lane operations. A web-based part and a hands-on lab instruction part.

**Graduate Research Assistant** (January 2010 to August 2012)

Department of Civil and Coastal Engineering, University of Florida, Gainesville, FL, USA.

- Researcher, “Managed Lane Operations-Adjusted Time of Day Pricing vs. Near Real Time Dynamic Pricing”, funded by FDOT and CMS.
  - Conducted research on High Occupancy/ Toll (HOT) lanes.
  - Examined pricing models as well as different management strategies for multi-segment HOT lanes.
  - Developed a procedure to optimize the pricing algorithms implemented in practice based on genetic algorithms (GAs).
  - Validated the procedure developed by optimizing the pricing algorithm currently implemented on the 95 Express in South Florida.
- Researcher and project manager, “Enhancing CORSIM for simulating HOT lanes”, funded by CMS.
  - Developed three sets of modeling components to demonstrate simulation of HOT lane operations. The first component implements three pricing strategies; including responsive pricing, a closed-loop-control-based algorithm, and time-of-day pricing. The second component mimics drivers’ lane choice behaviors in the presence of tolls, and the third represents different toll structures for multi-segment HOT lane facilities.
  - Enhanced traffic simulation program, CORSIM, to simulate HOT lanes by incorporating these new modeling components.
  - Validated the enhanced software by conducting simulation experiments involving the 95 Express network in South Florida.
- Supervisor of undergraduate and master students.

**Transportation Engineer** (June 2009 to December 2009)

Transportation Research Center, CMS.

Department of Civil and Coastal Engineering, University of Florida, Gainesville FL, USA.

- Researcher, “Validation and Enhancement of the Highway Capacity Manual’s Interchange Ramp Terminal Methodology”, sponsored by the American Association of State Highway and Transportation Officials, in cooperation with the Federal Highway Administration, and was conducted in the National Cooperative Highway Research Program, which is administered by the Transportation Research Board of the National Research Council.

- Assisted in the development of Chapters 22 (Interchange Ramp Terminals) and 34 (Interchange Ramp Terminals – Supplemental) of the 2010 Highway Capacity Manual.
- Assisted in the development of the operational analysis procedures of eight fundamental types of interchanges.
- Analyzed field data to determine parameter values in the lane utilization models for external arterial approaches of different types of interchanges (Diamond, Parclo A-2Q, B-2Q, B-4Q, AB-2Q, and AB-4Q).
- Assisted in the design of example problems for the demonstration of the different methodologies.
- Worked in the design of the supplemental problems included in Chapter 34.
- Assistant on developing research proposals, including the “Enhancing CORSIM for simulating HOT lanes” project which was accepted and funded by CMS.
- Supervisor of undergraduate and graduate students.

**Graduate Research Assistant** (August 2007 to May 2009)

Department of Civil and Coastal Engineering, University of Florida, Gainesville, FL, USA.

- Researcher, “A Pricing Approach for Mitigating Congestion in Multi-Modal Transportation Systems”, sponsored by Department of Transportation, Research and Innovative Technology Administration.
  - Developed a robust and proactive approach to determine time-varying tolls for HOT lanes in response to real-time traffic conditions.
  - Conducted simulation experiments using the field data from 95 Express in Florida to compare the approach developed with the one currently implemented on 95 Express.

**Research Assistant** (November 2006 to June 2007)

School of Civil Engineering, National Technical University of Athens, Greece.

- Conducted research for the development of educational manuscripts.
- Conducted literature reviews for various manuscripts pertaining to transportation modeling, driving education, and behavior.

**Transportation Engineer** (November 2006, April 2006 to May 2006, November 2005)

Trademco S. A., Athens, Greece.

- Researcher, “Market Survey for the use of various ticketing systems for Athens Mass Transit”.
  - Developed questionnaires for data collection regarding the ticketing systems options travelers use or willing to use when taking the transit in Athens.
  - Collected data in several transit stations in Athens.
- Researcher, “Origin-Destination identification study in the Airport’s landside road network”.
  - Collected numerous O-D data in Athens airport to clearly reflect the trips in and around the airport’s road network.
  - Transcribed the collected data in order to produce files suitably coded to be used as input to the processing software for various projects.

**Intern** (July 2005 to August 2005)

Public Power Corporation of Greece, Islands Region Department, Athens, Greece.

- Supervised construction conducted at power plants located in the periphery of Greece.

**TEACHING EXPERIENCE****Assistant Professor** (January 2014 to present)

Department of Civil and Environmental Engineering, The Citadel.

### **Courses prepared and taught**

- “Transportation Engineering” (Fall 2016, Fall 2015, Fall 2014, 8 sections)
- “Introduction to Civil Engineering” (Fall 2016)
- “Highway Engineering” (Spring 2017, Spring 2016, Spring 2015, Spring 2014, 11 sections)
- “Concrete and Asphalt Lab” (Spring 2017, Spring 2016, Spring 2015, Spring 2014, 11 sections)
- “Engineering Economy” (Summer I 2016, 1 section)
- “Engineering Management” (Summer II 2014, Summer II 2015, Fall 2015, Spring 2017, 5 sections)
- “Introduction to Civil Engineering” (Fall 2014, Fall 2016, 3 sections)

### **Instructor** (Summer 2016)

South Carolina Governor’s School for Science and Mathematics.

- “Tour of Engineering”

### **Transportation Engineer, Research and Teaching Assistant** (2009-2013)

Department of Coastal and Civil Engineering, University of Florida.

- **Guest Lecturer** - “Introduction to Civil Engineering” (Fall 2013, Fall 2011)
- **Instructor** - “Transportation Engineering” (Spring 2013)
- **Instructor** - “Transportation Systems Analysis/ Advanced Transportation Systems” (Fall 2012)
- **Teaching Assistant** - “Traffic Flow Theory” (Fall 2012)
- **Guest Lecturer** “Introduction to Civil Engineering” (Fall 2011)
- **Instructor** “Introduction to Transportation Engineering” (Fall 2010)
- **Lecturer** – “Introduction to Transportation Engineering” (Fall 2009)

## **HONORS & AWARDS**

### **International Fellowship**

- International Road Federation (IRF) Fellow, IRF (2012/2013)

### **National Awards**

#### United States

- Mara H. Wasburn Early Engineering Educator Grant, Women in Engineering Division, ASEE (2015).
  - Awarded annually to two women planning to pursue a career in engineering education, who have a demonstrated commitment to innovation in teaching, and/or potential for substantial contributions to the field.
- Future Industry Leader Spotlight Award, American Road & Transportation Builders Association (ARTBA), (August 2011)
  - Recognizes two women students enrolled in undergraduate or graduate studies at a U.S. college or university who have achieved an outstanding academic record and demonstrated extraordinary leadership skills within and outside the academic environment.
- Pikarsky Award for Outstanding M.S. Thesis in Science and Technology, Council of University Transportation Research Centers, (December 2009)
  - Given annually to one graduate student in the U.S. in transportation for the best M.S. thesis in science and technology.

Greece

- Award of Excellence for completing the undergraduate studies (3<sup>rd</sup> Place), Technical Chamber of Greece, (2006)
  - Given annually to the three students who completed their civil engineering undergraduate studies with the highest GPA (five-year program).

**University Awards**

The Citadel

- Faculty Fellow in Service Learning and Civic Engagement (SL&SC), (Summer II, 2014)
  - Given to faculty who develop K-12 STEM activities and help in several STEM outreach efforts.

University of Florida

- Alec Courtelis Award (1<sup>st</sup> place), International Center, University of Florida (2011)
  - Given annually to the three top international graduate students at UF (UF had about 5,580 international graduate students in 2011), in recognition of their academic excellence and outstanding contribution to the university and community.
- Outstanding International Student Award, College of Engineering, University of Florida (2011, and 2007)
  - Given annually to about ten international graduate students in the college of engineering, in recognition of their academic excellence.
- Gator of Engineering Attribute Graduate Student Award for Leadership, College of Engineering, University of Florida (June 2011)
  - Recognizes one graduate student in the UF college of engineering at the attribute of leadership.

National Technical University of Athens

- Award of Excellence based on GPA (7<sup>th</sup> Place) during the first year of undergraduate studies, from the National Technical University of Athens (2001-2002)
- Award of Excellence based on GPA (3<sup>rd</sup> Place) during the second year of undergraduate studies, from the National Technical University of Athens (2002-2003)
- Award “Achievement in Mathematics” (1<sup>st</sup> Place) during first and second year of undergraduate studies, National Technical University of Athens, (2001-2002, 2002-2003)

**Others**

- Poster Presentation Award (1<sup>st</sup> place) at the District 10/ Florida Section ITE 2011 Annual Meeting (December 2011)
- Presentation Award (3<sup>rd</sup> place) at the CMS Annual Student Conference (March 2011)
- WTS Central Florida Chapter Frankee Hellinger Graduate Scholarship (2011)
- Poster Presentation Award (1<sup>st</sup> place) at the inaugural TEAMFL poster session (October 2010)

**PUBLICATIONS**

**Journal Articles**

- Michalaka, D., Xu, R., Page, J., Steiner, R., Washburn, S., and Elefteriadou, L., (2016)  
“Roundabouts as a Form of Access Management”. *Transportation Research Record: Journal of the Transportation Research Board*, Transportation Research Board of National Academies, Washington, D.C., Volume 2556, pp. 1-9, DOI: <http://dx.doi.org/10.3141/2556-01>.
- Hale, D.K., Antoniou, C., Brackstone, M., Michalaka, D., Moreno, A.T., and Parikh, K., (2015)  
“Comparison of Optimization Methods for Assisted Calibration of Traffic Micro-Simulation”.

- Transportation Research Part C*, pp. 100-115. DOI: 10.1016/j.trc.2015.01.018
- Mamun, Md. S., **Michalaka**, D., Yin, Y., and Lawphongpanich, S. (2014). "Comparison of Socioeconomic Impacts of Market-based Instruments for Mobility Management", *International Journal of Sustainable Transportation*, Taylor & Francis, 08/12/2014. DOI: 10.1080/15568318.2013.859335.
- Michalaka**, D., Yin, Y., and Hale, D. (2013). "Simulating High-Occupancy/Toll (HOT) Lane Operations", *Transportation Research Record: Journal of the Transportation Research Board*, Transportation Research Board of National Academies, Washington, D.C., Volume 2396, pp. 124-132. DOI: 10.3141/2396-14.
- Michalaka**, D., Lou, Y., and Yin, Y. (2012). "Proactive and Robust Dynamic Pricing Strategies for High-Occupancy/Toll (HOT) Lanes", *Journal of Intelligent Transportation Systems: Technology, Planning, and Operations* (under re-review).

### Conference Proceedings

- Michalaka**, D. (2017). "Small changes can lead to great improvements: Lessons Learned". *124<sup>th</sup> American Society of Engineering Education (ASEE), Annual Conference and Exposition, New Columbus, OH. (abstract accepted)*
- Michalaka**, D., Rabb, R. J., and Engelhardt, S. M. (2017). "Tour of Engineering Summer Camp for Rising 8th and 9th Graders". *124<sup>th</sup> American Society of Engineering Education (ASEE), Annual Conference and Exposition, New Columbus, OH. (abstract accepted)*
- Michalaka**, D., Davis, W. J., and Brown, K. (2017). "Application of Indirect and Direct Measures for Student Teamwork Outcome Assessment within an Undergraduate Civil Engineering Curriculum". *124<sup>th</sup> American Society of Engineering Education (ASEE), Annual Conference and Exposition, New Columbus, OH.*
- Michalaka**, D., and Ghanat, S. (2017). "Study of Pre- and Post-Course Knowledge Surveys in an Engineering Economy Course". *124<sup>th</sup> American Society of Engineering Education (ASEE), Annual Conference and Exposition, New Columbus, OH.*
- Watson, M.K., Russo, L., and **Michalaka**, D. (2017). "Introduce a Girl to Engineering Day: Assessment of Impact and Future Directions". *2017 ASEE Zone II Conference Proceedings. Paper ID S1A3.*
- Davis, J., **Michalaka**, D., and Brown, K. (2017). "Student Perception of Teamwork Skills and Experiences across Prerequisite Courses in Transportation Engineering at The Citadel". *2017 ASEE Zone II Conference Proceedings. Paper ID V2B3.*
- Ghanat, S., **Michalaka**, D., James M. Grayson. (2017). "Study of Pre- and Post-Course Knowledge Surveys in an Engineering Economy Course". *2017 ASEE Zone II Conference Proceedings. Paper ID V3D4.*
- Michalaka**, D., Ghanat, S., Watson, M.K., Bower, K., and Welch R. "Effects of Classroom Pedagogies Used in a Freshmen Course on Students' Perception of the Sub-Disciplines of Civil Engineering". *2016 ASEE Southeast Section Conference Proceedings.*
- Michalaka**, D., and Golub, M. (2015). "Effective building and development of student teamwork using personality types in engineering courses". *122<sup>nd</sup> American Society of Engineering Education (ASEE), Annual Conference and Exposition, New Orleans, LA. Paper ID #17228.*
- Michalaka**, D. and Davis, W.J., (2015). "Application of Active Learning Techniques in Undergraduate Civil Engineering Curriculum". *122<sup>nd</sup> American Society of Engineering Education (ASEE), Annual Conference and Exposition, Seattle, WA. Paper ID #12271.*
- Davis, W.J., and **Michalaka**, D. (2015). "Teaching and Assessing Professional Skills in an

- Undergraduate Civil Engineering Curriculum”. *122<sup>nd</sup> American Society of Engineering Education (ASEE), Annual Conference and Exposition, Seattle, WA. Paper ID #12205.*
- Watson, M.K., Ghanat, S.T., **Michalaka, D.**, Bower, K., and Welch, R.W. (2015). “Why Do Students Choose Engineering? Implications for First-Year Engineering Education”. *7th First Year Engineering Experience (FYEE) Conference Proceedings.*
- Hale, D.K., Antoniou, C., Brackstone, M., **Michalaka, D.**, Moreno, A.T., and Parikh, K., (2015) “Comparison of Optimization Methods for Assisted Calibration of Traffic Micro-Simulation”. Transportation Research Board (TRB) of National Academies, Washington, D.C. *TRB 94<sup>th</sup> Annual Meeting Proceedings.*
- Mills, A., Holt, H., Rabb, R., and **Michalaka, D.** (2015). “An Effective Student Implemented STEM Outreach Program for Title 1 Schools”. *2015 ASEE Southeast Section Conference Proceedings.*
- Watson, M.K., Ghanat, S.T., Marley, K., and **Michalaka, D.** (2015). “Using Student Attitudes to Inform the Design of a First-Year Civil Engineering Course”. *2015 ASEE Southeast Section Conference Proceedings.*
- Hale, D.K., Antoniou, C., Brackstone, M., **Michalaka, D.**, Moreno, A.T., and Parikh, K., (2014) “Comparison of Optimization Methods for Assisted Calibration of Traffic Micro-Simulation”. *OPT-i, An International Conference on Engineering and Applied Sciences Optimization Proceedings.*
- Michalaka, D.**, and Yin, Y. (2013). “Managed Lanes Operations and Simulation using CORSIM”, 17th IRF World Meeting & Exhibition 2013, Riyadh, Saudi Arabia, *17th IRF World Meeting Proceedings.*
- Michalaka, D.**, and Davis, W. (2013). “Transforming Transportation Engineering Education to better address Universal Mobility Challenges”, 17th IRF World Meeting & Exhibition 2013, Riyadh, Saudi Arabia, *17th IRF World Meeting Proceedings.*
- Michalaka, D.**, Lu, J., and Yin, Y. (2012). “Fine-tuning Pricing Algorithms for High-Occupancy/Toll (HOT) Lanes”, Transportation Research Board (TRB) of National Academies, Washington, D.C. *TRB 91<sup>st</sup> Annual Meeting Proceedings.*

## Research Reports

- Steiner, S.L., Washburn, S., Elefteriadou, L., Gan, A., Priyanka, A., **Michalaka, D.**, Xu, R., Rachmat, S., and Cavaretta, A. “Roundabouts and Access Management”. Draft Final Report to Florida Department of Transportation, FDOT Contract BDK77 977-22, January 2014.
- Michalaka, D.**, “Florida Minority Occupant Protection Task Force”. Draft Final Report to Florida Department of Transportation Safety Office, FDOT Contract AQS38, October 2013.
- Washburn, S., Letter, C., and Michalaka, D. “FDOT Central Data Warehouse Enhancements, Part 3”. Final Report to Florida Department of Transportation, FDOT Contract BDK-75-934-15, November 2012.
- Michalaka, D.**, Lu, J. and Yin, Y. “*Adjusted Time of Day Pricing vs. Near-Real Time Dynamic Pricing. Part C Dynamic Tolling Algorithms for Managed Toll Lanes*”. Final Report to Florida Department of Transportation, FDOT Contract BDK-77-977-04, November 2011.
- Michalaka, D.**, Hale, D., Simmerman, T., Yin, Y., and Washburn, S. “*Enhancing CORSIM for Simulating High Occupancy/ Toll Lane Operations*”. Final Report to the Center for Multimodal Solutions for Congestion Mitigation, University of Florida, Project Number 2010-015, December 2011.



Elefteriadou, L., **Michalaka, D.**, Elias, A., Lu, C., and Fang, C. “*Validation and Enhancement of the Highway Capacity Manual’s Interchange Ramp Terminal Methodology*”. Final Report to the National Cooperative Highway Research Program Transportation Research Board of The National Academies, NCHRP 03-60A, December 2010.

## **GRANT PROPOSALS (since Jan. 2014)**

### **“Center for Connected Multimodal Mobility (C<sup>2</sup>M<sup>2</sup>), Improving Mobility of People and Goods”, (~\$7,800,000 over 5 years)**

Submitted May 2016, awarded November 2016)

*Submitted by: Clemson University (CU), Clemson, SC, 29634, University of South Carolina (USC), Columbia, SC, 29208, South Carolina State University (SCSU), Orangeburg, SC, 29117, The Citadel (Citadel), Charleston, SC, 29409, Benedict College (BC), Columbia, SC, 29204.*

The proposed C<sup>2</sup>M<sup>2</sup> research will conduct research in the following areas 1) increased access to opportunities to promote equity in connecting regions and communities, including urban and rural communities; 2) smart cities; 3) innovations to improve multi-modal connections, system integration, and security; 4) assistive technologies for those with physical or cognitive disabilities; 5) data modeling and analytical tools to optimize passenger and freight movements; 6) innovations in multi-modal planning and modeling for high-growth regions; 7) non-traditional modes of transport and shared infrastructure use; and 8) regional planning and setting of transportation priorities. The center will be a pioneer not only in advancing technology but also in exploring the social, economic, political, and psychological contexts surrounding deployment of connected and automated vehicle technologies.

### **“Regional UTC (Region 4) on FAST Act Research Priority: Reducing Congestion” (~\$14,300,000 over 5 years), (Submitted May 2016, awarded November 2016)**

*Submitted by: University of Florida, Gainesville, FL 32611 – Lead Institution Auburn University, Auburn, AL 36849, The Citadel, Charleston, SC 29409, Florida International University (Minority Serving Institution), Miami, FL 33174, Georgia Institute of Technology, Atlanta, GA 30332, Jackson State University (Minority Serving Institution), Jackson, MS 39217, North Carolina State University, Raleigh, NC 27695, Tennessee Technological University, Cookeville, TN 38505, University of Alabama at Birmingham, Birmingham, AL 35294, University of North Carolina at Chapel Hill, Chapel Hill, NC 27599.*

This proposal is to establish a Regional University Transportation Center (UTC) within Federal Region 4 (Southeast) that will focus on Reducing Congestion. As the region continues to attract residents at a high rate (particularly retirees), and with longer commutes and significant tourism activity, congestion will continue to be at the forefront of local and state agencies’ agendas.

### **“Mini-Roundabouts”, (\$2,950)**

**The Citadel Foundation**, Faculty Research Grant (Submitted Feb. 2016, Awarded September 2016)

*Principle Investigator: Dr. Dimitra Michalaka*

This research focuses on mini-roundabouts, which are single-lane roundabouts with inscribed circular diameter between 50 and 90 ft. The purpose is to conduct a literature review on mini-roundabouts and identify locations where mini-roundabouts can be implemented in SC.

### **“A Study of Sign Life Expectancy”, (\$178,985)**

**South Carolina Department of Transportation (SCDOT)**, (Submitted Oct. 2015, not

awarded)

*Co-Principle Investigators: Dr. Wayne A. Sarasua, P.E. (lead) (Clemson), Dr. Mashrur (Ronnie) Chowdhury, P.E. (Clemson), Dr. Eric Huang (Clemson), Dr. William J. Davis, P.E. (The Citadel), Dr. Dimitra Michalaka (The Citadel)*

The overall goal of this research is to identify the actual expected sign life based on retroreflectivity levels for different types of signs and other factors that may influence sign life including sheeting type, manufacturer, color, exposure to sunlight, humidity level and other environmental factors. The expected lifecycle of these signs should be presented in a manner and confidence level that could be included with a recommendation for SCDOT management to change the policy regarding sign replacement.

**“Navigation of Pedestrians and Bicycles at Roundabouts”, (\$2,935)**

**The Citadel Foundation**, Faculty Research Grant (Awarded June 2015)

*Principle Investigator: Dr. Dimitra Michalaka*

This research will focus on how pedestrians and bicyclists navigate through roundabouts, and how the movement of pedestrians and bicycles influence the capacity and throughput of vehicle traffic at roundabouts. The research will involve data collection at selected roundabouts in Charleston, SC area.

**“Environmental Justice Analyses When Considering Toll Implementation or Rate Changes”, (\$500,000)**

**National Cooperative Highway Research Program (NCHRP 08-100)** (Submitted Feb. 2014, not awarded)

*Co-Principle Investigators: Dr. Yafeng Yin (lead) (University of Florida), Dr. David M. Levinson (University of Minnesota), Dr. Yinlai Wang (University of Washington), Dr. Dimitra Michalaka (The Citadel)*

Tolling has become more prevalent as a funding mechanism as well as an operations strategy for transportation facilities. Tolling can have an impact on low-income and minority populations, but the extent of the impact is unclear. As a result of Presidential Executive Order 12898, U.S.DOT Order 5610.2(a), and Title VI of the Civil Rights Act of 1964, the U.S.DOT requires transportation agencies to take into consideration environmental justice (EJ) in all transportation programs, policies, and activities. However, there is little guidance on how to best incorporate EJ analysis in assessing equity concerns in the context of pricing. Further, there is little consensus about what types of mitigation measures are appropriate to be used to offset the effects of tolling on minority and low-income populations. Research is needed to better understand how to measure and address the impact of tolling on minority and low-income populations as it relates to mobility, access, and household income. The objective of this research is to develop a toolbox that practitioners can use to evaluate and address environmental justice issues that arise when implementing tolls or rate changes. The toolbox will be used to assist transportation decision makers with how to assess and offset any potential impacts on minority and low-income populations as a result of tolling.

**“Roundabouts and Access Management”, (\$3,000)**

**The Citadel Foundation**, Faculty Research Grant (Awarded June 2014)

*Principle Investigator: Dr. Dimitra Michalaka*

The objective of this project is to conduct an operational analysis of selected roundabouts in Charleston, SC area. The operational analysis will examine how roundabouts perform relatively to other types of un-signalized intersections and how they can enhance access management located in their vicinity.

## PRESENTATIONS

- “Student Perception of Teamwork Skills and Experiences across Prerequisite Courses in Transportation Engineering at The Citadel”. *2017 ASEE Zone II Conference*, San Juan, Puerto Rico (March 2017).
- “Study of Pre- and Post-Course Knowledge Surveys in an Engineering Economy Course”. *2017 ASEE Zone II Conference*, San Juan, Puerto Rico (March 2017).
- “Highlights from the Teaching-Professor Conference 2016: Tips, Tricks & Handouts”. *Citadel Academy for the Scholarship of Teaching, Learning & Evaluation (CASTLE)* session (and final CASTLE for 2016), Charleston, SC (November 2016).
- “Roundabouts as a Form of Access Management”. *Transportation Research Record: Journal of the Transportation Research Board, Transportation Research Board (TRB) 95<sup>th</sup> Annual Meeting*, Washington, DC (January 2016).
- “Managed Lane Operations” Sigma Xi seminar, The Citadel (November 2015).
- “Application of Active Learning Techniques in Undergraduate Civil Engineering Curriculum”. *122<sup>nd</sup> American Society of Engineering Education (ASEE), Annual Conference and Exposition*, Seattle, WA, (June 2015).
- “Teaching and Assessing Professional Skills in an Undergraduate Civil Engineering Curriculum”. *122<sup>nd</sup> American Society of Engineering Education (ASEE), Annual Conference and Exposition*, Seattle, WA (June 2015).
- “Operational Analysis at Roundabouts to Identify Access Management”, *Southern District Institute of Transportation Engineers Annual Meeting*, Biloxi, MS, (April 2015).
- “Comparison of Optimization Methods for Assisted Calibration of Traffic Micro-Simulation”. *Transportation Research Board (TRB) 94<sup>th</sup> Annual Meeting*, Washington, DC (January 2015).
- “Comparison of Optimization Methods for Assisted Calibration of Traffic Micro-Simulation”. *OPT-I, An International Conference on Engineering and Applied Sciences Optimization*, Kos Island, Greece, (June 2014).
- “Simulating High-Occupancy/Toll (HOT) Lane Operations”, *Southern District Institute of Transportation Engineers Annual Meeting*, Greensboro, GA, (March 2014).
- “Managed Lanes Operations and Simulation using CORSIM”, *17th IRF World Meeting & Exhibition 2013*, Riyadh, Saudi Arabia, (November 2013).
- “Transforming Transportation Engineering Education to better address Universal Mobility Challenges”, *17th IRF World Meeting & Exhibition 2013*, Riyadh, Saudi Arabia, (November 2013).
- “Florida Minority Occupant Protection Task Force”, *University Transportation Centers (UTC) Conference for the Southeastern Region*, Orlando, FL (April 2013).
- “Enhancing CORSIM for simulating High Occupancy/ Toll Lanes Operations”, *CORSIM Workshop*, Orlando, FL (August 2011).
- “Introducing Greek Culture”, *Multicultural Fair* at Shands Hospital, Gainesville, FL (August 2011).
- “Introducing Greek Culture”, *One world, many stories*, Levy County Public Libraries at Williston, A.F. Knotts, Bronson, Cedar Key, and Chiefland, FL (Summer 2011).
- “Enhancing CORSIM for Simulating High Occupancy/Toll Lanes Operations”, *CMS Annual Student Conference*, Gainesville, FL (March 2011).
- “Proactive and Robust Dynamic Pricing Strategies for High Occupancy/Toll (HOT) Lanes”, *Innovations in Pricing of Transportation Systems: Workshop and Conference*, Gainesville, FL (May 2010).

### Poster Presentations

- “Access Management Aspects Influencing Roundabout Design and Operations”, *Transportation Research Board 93<sup>rd</sup> Annual Meeting*, Washington, DC (January 2014).
- “Deployment Strategies of Managed Lanes on Arterials”, *Transportation Research Board 93<sup>rd</sup> Annual Meeting*, Washington, DC (January 2014).
- “Managed Lanes Operations and Simulation using CORSIM”, *17th IRF World Meeting & Exhibition 2013*, Riyadh, Saudi Arabia, (November 2013).
- “Transforming Transportation Engineering Education to better address Universal Mobility Challenges”, *17th IRF World Meeting & Exhibition 2013*, Riyadh, Saudi Arabia, (November 2013).
- “Simulating High-Occupancy/Toll (HOT) Lane Operations”, *Transportation Research Board 92<sup>nd</sup> Annual Meeting*, Washington, DC (January 2013).
- “Fine-tuning Pricing Algorithms for High-Occupancy/Toll (HOT) Lanes”, *Transportation Research Board 92<sup>nd</sup> Annual Meeting*, Washington, DC (January 2013).
- “Pricing of Multi-segment High Occupancy/Toll (HOT) Lane Facilities”, *Transportation Research Board 91<sup>st</sup> Annual Meeting*, Washington, DC (January 2012).
- “Pricing of Multi-segment High Occupancy/Toll (HOT) Lane Facilities”, *District 10/ Florida Section ITE 2011 Annual Meeting*, St. Petersburg, Fl. (December 2011).
- “Enhancing CORSIM for Simulating High-Occupancy-Vehicle and -Toll Lane Operations”, *Transportation Research Board 90<sup>th</sup> Annual Meeting*, Washington, DC (January 2011).
- “Proactive and Robust Dynamic Pricing Strategies for High-Occupancy-Toll Lanes”, *Transportation Research Board 90<sup>th</sup> Annual Meeting*, Washington, DC (January 2011).
- “Enhancing CORSIM for simulating High Occupancy/ Toll Lane Operations”, *TEAMFL meeting*, Miami, Fl. (October 2010).
- “Proactive and Robust Pricing Strategies for High Occupancy/ Toll Lanes”, *Transportation Research Board 89<sup>th</sup> Annual Meeting*, Washington, DC (January 2010).
- “Proactive and Robust Pricing Strategies for High Occupancy/ Toll Lanes”, *CMS Annual Student Conference*, Gainesville, Fl. (March 2009).
- “Proactive and Robust Pricing Strategies for High Occupancy/ Toll Lanes”, *TRANSPO 2008*, Orlando, Fl. (September 2008).

### WORKSHOPS (since Jan. 2013)

#### Offered

- **Elementary Engineering (x2)**

Target Audience: Elementary School Teachers

Date: August 5<sup>th</sup>, 2014

Location: Bluffton High School, Bluffton, SC

Those workshops reviewed how the engineering design process can be incorporated into the elementary classroom and introduce teachers to engineering project resources. Teachers completed engineering activities and explored ways that they can incorporate engineering in their science and math classes.

- **Managed Lanes Operations and Simulation using CORSIM Workshop.**

Target Audience: Transportation Engineering Professionals

Date: April 29<sup>th</sup>-30<sup>th</sup>, 2013

Location: Online and University of Florida, Gainesville, Fl

This 2-part workshop included a 1.5 hour webinar/lecture on Monday, April 29 (2 PDH credits offered) followed by a 4 hour hands-on computer lab on Tuesday, April 30 (4 PDH credits offered) on managed lanes operations and simulation using CORSIM.

### **Attended**

- **2015 ExCEED Workshop**

Date: June 21<sup>th</sup>-26<sup>th</sup>, 2015

Location: Florida Gulf Coast University, Skokie, IL

The ExCEED Teaching Workshop is a six-day practicum that provides engineering educators with an opportunity to improve their teaching abilities. ASCE has successfully presented this workshop each summer for the past sixteen years. Faculty members across the country and around the world have benefited from this workshop.

- **2014 Portland Cement Association (PCA) Professors' Workshop.**

Date: July 21<sup>th</sup>-25<sup>th</sup>, 2014

Location: PCA Campus, Skokie, IL

The Professors' Workshop is designed to provide faculty in engineering, architecture, and construction management programs the tools to teach the latest developments in concrete design, construction, materials, pavements, and sustainability.

The week-long event also included networking opportunities to facilitate exchanging ideas with professors from many universities.

- **2014 ASEE Annual K-12 Workshop.**

Date: June 14<sup>th</sup>, 2014

Location: Convention Center, Indianapolis, IN

This daylong program for teachers and engineering educators from across the country provided an energizing, interactive overview of successful engineering education instruction for the K-12 classroom. Attendees learned engaging hands-on lessons and interactive activities to share with students, received takeaway materials ready for use in the classroom, and had opportunities to network with other engineering educators.

- **Excellence in Civil Engineering Education (ExCEED) Mini-Workshop**

Date: Jan. 10<sup>th</sup>-11<sup>th</sup>, 2014

Location: The Citadel, Charleston, SC

Two-day workshop to discuss strategies for effective instruction, including consideration of diverse learning styles, use of board notes, and outline of learning objectives.

## **PROFESSIONAL SERVICE/ LEADERSHIP**

### **Paper Review**

- ASEE Annual Conference and Exposition, 2015, 2016, 2017
- Terrell Paper Competition, ASCE Region 4, 2016, 2017
- IEEE Transactions on Intelligent Transportation Systems, 2016
- 19th IEEE Intelligent Transportation Systems Conference, 2016
- Transportation Research Part C, 2013, 2014
- Transportation Research Board 92<sup>nd</sup> Annual Meeting, 2013
- Transportation Research Board 91<sup>st</sup> Annual Meeting, 2012
- 14<sup>th</sup> International IEEE Annual Conference on Intelligent Transportation Systems, 2011
- World Conference on Transport Research (WCTR), 2010

### **University governance and service**

- Committee member** (Spring 2017 to present)  
Facilities and Services, The Citadel.
- Committee member** (Spring 2014 to present)  
Civil and Environmental Engineering (CEE), Development of a Graduate Certificate Program on “Sustainable Public Infrastructure”, The Citadel.
- Committee member** (Spring 2014 to present)  
Civil and Environmental Engineering (CEE) Awards, Scholarships and Advancement (ASA), The Citadel.
- Faculty Fellow in Service Learning and civil engagement** (Summer II, 2014)  
The Citadel.
- Committee member** (Spring 2014)  
School of Engineering, Mechanical Engineering Department Faculty Search, The Citadel.
- Committee member** (Spring 2011 to Summer 2012)  
Civil and Coastal Engineering (CCE) Graduate Student Advisory Group, University of Florida.
- Committee member** (Fall 2011)  
Doctoral Dissertation Advisor/Mentor Awards Committee, University of Florida.

### **Officer Appointments**

- Chair** (since 2017)  
Road Safety Intersection and Roundabout Subcommittee, International Road Federation (IRF)
- Chair** (since 2017)  
Civil Engineering Division, Southeast Section, American Society for Engineering Education (ASEE).
- Secretary** (2016)  
Civil Engineering Division, Southeast Section, American Society for Engineering Education (ASEE).
- Faculty Advisor** (since Fall 2014)  
Society of Women Engineers (SWE), The Citadel, Student Chapter
- Faculty Advisor** (Spring 2014, Spring 2015)  
ASCE Conference Transportation Competition, The Citadel, Student Chapter
- Faculty Co-Advisor** (Spring 2014)  
Society of Women Engineers (SWE), The Citadel, Student Chapter
- Faculty Advisor** (Fall 2012 to December 2013)  
Women’s Transportation Seminar (WTS), University of Florida, Student Chapter
- Fundamentals of Engineering Exam Review Coordinator/ Member Coordinator** (Fall 2012)  
Tau Beta Pi Engineering Honorary Society – Florida Alpha Chapter, University of Florida
- President** (Spring 2011 to Summer 2012)  
WTS, University of Florida, Student Chapter
- Treasurer** (Summer 2010 to Fall 2010)  
WTS, University of Florida, Student Chapter
- Social Secretary** (Fall 2007 to Spring 2009, Summer 2011 to Spring 2012)  
Institute of Transportation Engineers (ITE), University of Florida, Student Chapter

### **Conference/ Event Organizing**

#### **Organizing Chair**

- Introduce a Girl to Engineering Day, The Citadel, Charleston, SC (February 2015, February 2016, February 2017)

- Bicycle Helmet Fitting Course, UF, Gainesville, FL (November 2012, March 2013)
- UF WTS 2<sup>nd</sup> Annual Transportation Symposium, Gainesville, FL (November 2012)
- Engineering GatorTRAX, UF, Gainesville, FL (February 2012)
- UF WTS Transportation Symposium, Gainesville, FL (October 2011)
- Resume Development and Interview Preparation Workshop, Gainesville, FL (April 2011)

#### **Organizing Committee Member**

- Introduce a Girl to Engineering Day, The Citadel, Charleston, SC (February 2014)
- Family Engineering Night, Williams Elementary School, Gainesville, FL (April 2012)
- Family Engineering Night, Lawton Chiles Elementary School, Gainesville, FL (February 2012)
- CORSIM Workshop, Orlando, FL (August 2011)
- 2010 Highway Capacity Manual Workshop, Orlando, FL (August 2010)
- Innovations in Pricing of Transportation Systems: Workshop and Conference, Orlando, FL (May 2010)
- Congestion Mitigation Strategies Symposium/ TRC Alumni & Friends Lunch, Gainesville, FL (November 2009)
- UF/ TRC Workshop on Roundabouts, Orlando, FL (August 2009)

#### **Volunteering**

- Metanoia STEM program, Mary Ford Elementary School, North Charleston, SC (July 2014)
- STEM Activities at Little Bulldogs program, Burke Middle School, Charleston, SC (July 2014)
- Citadel Student Research Conference (CSRC) poster judge, Daniel Library, The Citadel, Charleston, SC (March 2014)
- Charleston STEM Festival, The Citadel College of Engineering Booth, Liberty Square, Charleston, SC (February 2014)
- Careening Roller Coasters, Cade Museum for Creativity and Invention, Gainesville, FL (March 2013)
- Engineering Fair, University of Florida, Gainesville, FL (February 2013)
- Tau Beta Pi new member initiation, UF, Gainesville, FL (November 2012)
- Learn History, Howard Bishop Middle School, Gainesville, FL (November 2012)
- Engineering GatorTRAX, UF, Gainesville FL (September 2012)
- City of Gainesville, Traffic Management Center, Gainesville, FL (Fall 2012)
- “Dream Big Read”, International Student Speakers’ Bureau, Public Libraries, Levy County (Summer 2012)
- Family Engineering Night, Williams Elementary School, Gainesville, FL (April 2012)
- SECME, University of Florida, Gainesville, FL (March 2012)
- Engineering GatorTRAX, University of Florida, Gainesville, FL (March 2012)
- Afterschool program, Lawton Chiles Elementary School, Gainesville, FL (March 2012)
- Engineering Fair, University of Florida, Gainesville, FL (February 2012)
- Family Engineering Night, Lawton Chiles Elementary School, Gainesville, FL (February 2012)
- 2012 Alachua Region Science and Engineering Fair, Gainesville, FL (February 2012)
- Science Fair, Lincoln Middle School, Gainesville, FL (December 2011)
- Science Fair, Oak View Middle School, Newberry, FL (November 2011)
- Soup Kitchen/ St. Francis House, Gainesville, FL (November 2011)
- 18<sup>th</sup> ITS World Congress, Orlando, FL (October 2011)
- “One world, many stories”, International Student Speakers’ Bureau, Public Libraries, Levy County (Summer 2011)

## **Other affiliations**

### **Member**

- American Society of Civil Engineers (ASCE) (since 2015)
- Society of Women Engineers (SWE) (since 2014)
- South Carolina Institute of Transportation Engineers (since 2014)
- Tau Beta Pi (since 2012)
- Transportation Research Board (since 2007)
- Congestion Pricing Outreach Committee (since 2012)
- Technical Chamber of Greece – Registered Civil Engineer (since 2007)

### **Friend**

- Congestion Pricing Committee (ABE25), Transportation Research Board
- Committee on Highway Capacity and Quality of Service (AHB 40), Transportation Research Board
- Traffic Simulation Models Subcommittee (AHB45), Transportation Research Board
- Committee on Roundabouts (ANB75), Transportation Research Board

### **Speaker**

- International Student Speakers' Bureau (ISSB) (2011-2013).
- Gator Global Educators (GaGE) (2012-2013).