

ASHISH KULSHRESTHA

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EDUCATION

- **University of Florida, Gainesville, FL, USA**
Ph.D. in Civil Engineering (Transportation) 2011
- **Indian Institute of Technology (IIT), Delhi, India**
B.Tech. in Civil Engineering 2006

PROFESSIONAL INTERESTS

- Traffic Operations
- Traffic Engineering
- Simulation and Modeling
- Travel Demand Modeling
- Travel Behavior Analysis
- Transportation Pricing

PROFESSIONAL EXPERIENCE

Research Associate, Transportation Research Center (TRC), University of Florida Jan 2012 – Present
Graduate Research Assistant, TRC, University of Florida Aug 2007 – Dec 2011

- **Impacts of dynamic pricing on managed lane operations for 95 Express HOT lanes (FDOT Project)**
 - Developed a simulation tool in MATLAB to capture and analyze commuters' behavior against tolling strategies
 - Performed simulation experiments to analyze time-of-day pricing vs. dynamic pricing for managed lane operations
- **Investigation of effect of auxiliary lanes on freeway segment volume throughput (FDOT Project)**
 - Analyzed the quantitative effect of auxiliary lanes on additional volume throughput of freeway segments
 - Conducted simulation experiments using CORSIM and HCM methodology for different designed scenarios
- **Nonlinear road pricing for transportation networks (FDOT Project)**
 - Analyzed and evaluated the impacts of different forms of nonlinear pricing for the Gainesville, FL network using the developed models and algorithms, and the traffic and network information obtained from FSUTMS
 - Developed a VBA application to demonstrate the results and impacts of nonlinear pricing for a small network
- **Capacity of signalized intersection with a left-turn lane using a probabilistic approach**
 - Developed probabilistic models to estimate capacity taking into account the left-turn blockage and spillover
 - Investigated the effect of left-turn bay length and demand and compared results using CORSIM simulations
- **Traffic impact analysis for proposed developments**
 - Conducted traffic impact analysis and forecasting for proposed developments using FSUTMS (Travel Demand Model for the State of Florida) powered by Cube Voyager
 - Performed traffic impact analysis of six intersections along a corridor using HCS, for a proposed development
- **Work mode choice modeling and explanatory analysis of value of travel time**
 - Developed work mode choice models using the data from Bay Area Travel Survey
 - Evaluated the variability in the value of travel time for work trips across different modes, trip distances and income
- **Case study on transportation modeling and forecasting application**
 - Used four-step modeling process to forecast link volumes for an urban area
 - Evaluated the ability of proposed transit system and other tolling strategies to help alleviate network congestion
- **Transit-based evacuation planning under demand uncertainty (PhD Dissertation)**
 - Investigated how to optimize the use of public transportation to evacuate transit-dependent population
 - Developed optimization models to optimally determine the locations of public shelters and evacuee assemble points
 - Proposed efficient solution algorithms and implemented them using mathematical programming techniques
- **Transportation planning of highway network**
 - Implemented tolling and suggested new developments/construction schemes within the available budget to alleviate congestion from the highway system
 - Developed an algorithm in MATLAB to obtain optimal scheme from various alternatives
- **Site analysis for proposed developments**
 - Conducted spatial analysis using ArcGIS to propose the recommended potential locations for development sites
- **Simulation tool for queuing at toll plaza**
 - Developed a microscopic simulation tool using C# for queuing at a toll plaza
 - Accommodated different types of arrival and departure rates, different simulation period (real-time and scaled time), provided output performance measures and their plots, developed user friendly GUI with animation

Research Intern, Center for Building Materials, Technical University Munich, Germany May 2005 – July 2005

- **Numerical modeling of packing density for concrete**
 - Worked on numerical modeling of packing density of granular mixes for concrete using C programming and then analyzed and compared the results using the experimental data

Research Assistant, Indian Institute of Technology, Delhi, India Aug 2005 – May 2006

- **Platoon dispersal characteristics at signalized intersections under heterogeneous traffic conditions**
 - Estimated vehicle delays and analyzed queue characteristics using traffic data collected at signalized intersections

COMPUTER SKILLS

- **Traffic Software:** CORSIM, HCS, TRANSYT-7F, AIMSUN, Synchro, Passer, GPSS
- **Planning and Statistical Software:** CUBE, AutoCAD, ArcGIS, SPSS, LIMDEP
- **Programming Languages:** C, C#, VBA, HTML, MATLAB, GAMS, CPLEX, LINDO

RELEVANT COURSEWORK

- **Transportation Engineering:** Urban Transportation Models, Discrete Choice Analysis, Urban Street Simulation and Control, Urban Transportation Planning, Traffic Engineering, Traffic Flow Theory, Transportation Systems Analysis, Computation Methods in Transportation Engineering, Survey of Planning Information System (GIS)
- **Industrial and System Engineering:** Linear Programming and Network Optimization, Linear Programming Extensions, Advanced Network Optimization, Deterministic Methods in Operations Research, Applied Probability Methods, Statistical Methods in Research

PUBLICATIONS

Articles

- Kulshrestha, A., Lou, Y and Yin, Y. (2011). Pick-up locations and bus allocation for transit-based evacuation planning with demand uncertainty. *Journal of Advanced Transportation* (submitted).
- Kulshrestha, A., Wu, D., Lou, Y., and Yin, Y. (2011). Robust shelter locations for evacuation planning with demand uncertainty. *Journal of Transportation Safety and Security*, Vol. 3, No. 4, 272-288.
- Wu, D., Kulshrestha, A., Yin, Y., Tillander, T., and Plass, M. (2011). Impacts of dynamic pricing on managed lane operations. *TRB 90th Annual Meeting Compendium of Papers CD-ROM*, Paper No. 11-1772, USA.
- Kulshrestha, A. and Srinivasan, S. (2010). Explanatory analysis of value of travel time for work trips. *Innovations in Pricing of Transportation Systems Conference*, Orlando, FL, USA.
- Osei-Asamoah, A., Kulshrestha, A., Washburn, S.S., and Yin, Y. (2010). Impact of left-turn spillover on through movement discharge at signalized intersection. *Transportation Research Record*, 2173, 80-88.

Research Reports

- Wu, D., Kulshrestha, A., and Yin, Y. (2011). Managed lane operations – Adjusted time of day pricing vs. near-real dynamic pricing: Impacts of dynamic pricing on managed lane operations. University of Florida, Transportation Research Center (TRC), Research Report.
- Kulshrestha, A., Modi, V., Washburn, S.S., and Yin, Y. (2010). Investigation of freeway capacity: a) Effect of auxiliary lanes on freeway segment volume throughput, and b) Freeway segment capacity estimation for Florida freeways. University of Florida, TRC, Research Report.

PRESENTATIONS

- *Pickup locations and bus allocation for transit-based evacuation planning with demand uncertainty*
 - Transportation Research Board 91st Annual Meeting, Washington DC, January 2012 (poster)
- *Two-stage approach for pick-up and shelter locations for transit evacuation under demand uncertainty*
 - INFORMS Annual Meeting, Charlotte, NC, November 2011
- *Transit-based evacuation planning under demand uncertainty*
 - NSF Research Day, University of Florida, Gainesville, FL, October 2011 (poster)
- *Impact of dynamic pricing on managed lane operations*
 - Transportation Research Board 90th Annual Meeting, Washington DC, January 2011
 - TRANSPO 2010, Ponte Vedra Beach, FL, December 2010
 - TEAMFL Meeting, Miami, FL, October 2010 (poster)
- *Explanatory analysis of value of travel time for work trips*
 - Innovations in Pricing of Transportation Systems Conference, Orlando, FL, May 2010
- *Impact of left-turn spillover on through movement discharge at signalized intersection*
 - Transportation Research Board 89th Annual Meeting, Washington DC, January 2010 (poster)
- *Estimating capacity of signalized intersection with a left-turn lane using a probabilistic approach*
 - TRANSPO 2008, Orlando, FL, September 2008 (poster)

HONORS & AWARDS

- Third place winner of poster presentation, TEAMFL Meeting, Miami, FL, 2010
- Second place winner of poster presentation, TRANSPO, Orlando, FL, 2008
- Outstanding Academic Achievement, International Center, University of Florida, 2007

PROFESSIONAL ACTIVITIES

- Student Member, Transportation Research Board (TRB)
- Student Member, Institute of Transportation Engineers (ITE)
- Student Member, Institute for Operations Research and Management Sciences (INFORMS)
- Member-At-Large, ITE Student Chapter, University of Florida, 2008 – 2009
- Secretary, ITE Student Chapter, University of Florida, 2007 – 2008