

### Contents: ODU Launches Transportation Program

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The state of the transportation system has become a critical issue in Virginia and nationally. Traffic congestion touches the lives of millions of people in urban areas, who waste untold hours stuck in traffic rather than spending time with loved ones. Congestion also has major impacts on the business community and the environment.

*ODU  
Transportation  
Research Focus*

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Congestion has become a major problem in many areas of Virginia. The Texas Transportation Institute's *Urban Mobility Report* ranks the Washington, D.C. and Hampton Roads regions as the 3rd and 31st most congested areas of the country, respectively. In Hampton Roads, major freight lines converge in a congested urban environment that is constrained by tunnel crossings, creating the potential for massive gridlock in the future.

*Major  
Accomplishments*

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There is a need both to develop innovative solutions to address transportation problems, and educate the transportation leaders of tomorrow that will help craft new solutions. In order to address these critical needs, the Old Dominion University Civil and Environmental Engineering Department launched a new transportation program in 2006. The new program's goals are to deliver cutting edge research to help address important transportation issues while simultaneously educating the leaders of tomorrow.

*2007 TRB  
Presentations*

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ODU is proud to announce that two new faculty have been hired to develop the transportation program, Dr. Asad Khattak and Dr. Michael Fontaine. Dr. Khattak comes to ODU as the Batten Endowed Chair in Transportation Systems. Prior to joining ODU, Dr. Khattak was a Professor at the University of North Carolina-Chapel Hill, where he developed an international reputation as an expert in planning and intelligent transportation Systems. Dr. Fontaine brings expertise in transportation operations, safety, and simulation. He has previously worked in transportation research at the Texas Transportation Institute and the Virginia Transportation Research Council

*Transportation  
Degrees at ODU*

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The development of ODU's transportation program has been occurring at a rapid pace since the program was formed in the summer. A new graduate education program will start in Fall 2007, and a great deal of funded research has already begun at ODU. This annual report provides a summary of the many developments that have occurred at ODU since the program was started in the summer of 2006, including:

*Journal Editing*

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- Profiles of full-time and adjunct faculty
- Summaries of current research activities
- A description of current activities at the Transportation Research Board
- A description of the new graduate program

*Mission, Sponsors  
& Faculty*

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We are really excited about the potential of the transportation program, and look forward to growing into a nationally-recognized group.



## Transportation Faculty Profiles

The Civil and Environmental Engineering Department has hired two-full time faculty, Dr. Asad Khattak and Dr. Michael Fontaine. These two faculty will serve as the core of the research and education programs within the transportation program.



*Dr. Asad J. Khattak  
Batten Endowed Chair  
Professor of  
Transportation Engineering*

*E-mail: akhattak@odu.edu*

**Dr. Asad J. Khattak** is internationally known for his work in transportation planning and intelligent transportation systems. He is the Batten Endowed Chair in Civil and Environmental Engineering Department of Old Dominion University. His vision for the ODU transportation program includes excellence in inter-disciplinary transportation research, education of a technologically savvy workforce, engagement with stakeholders, and leadership in regional, national & international transportation activities.

He teaches courses on transportation planning, intelligent transportation systems, and safety. He received his Masters and Ph.D. degrees in Civil Engineering from Northwestern University in 1988 and 1991, respectively. Dr. Khattak has conducted and managed research (totaling three million dollars) on (a) traveler behavior, transportation network performance and the role of Intelligent Transportation Systems, (b) transportation safety and traffic operations and (c) new transportation planning methods for highways, transit, pedestrian, bicycle and air transportation systems. Dr. Khattak has 15 years of research experience and 11 years of teaching experience in the transportation field, after completing his Ph.D. He has authored 55 scholarly journal articles and 42 technical reports. He has presented his research work at more than 40 international conferences. Dr. Khattak is the Editor for the Journal of Intelligent Transportation Systems, Taylor and Francis Publishers. As editor-in-chief, he has published 12 issues of the journal. Each issue typically contains 4 to 5 peer-reviewed papers and occasionally book reviews or comments on past papers.

**Dr. Michael Fontaine** is an assistant professor in the Civil & Environmental Engineering Department of Old Dominion University. Dr. Fontaine's research interests include transportation operations, safety, traffic simulation, and intelligent transportation systems. Dr. Fontaine says, "I grew up in Hampton Roads, and the transportation challenges here are a major reason why I became interested in transportation engineering. I'm very excited to be joining ODU, and I expect that our program will be able to provide a significant benefit to Hampton Roads and the rest of the Commonwealth."

Dr. Fontaine's position is also affiliated with the Virginia Modeling, Analysis, and Simulation Center (VMASC), and he is working with VMASC researchers on several projects involving traffic simulation. He received B.S., M.S., and Ph.D. degrees from the University of Virginia and is a registered professional engineer. Prior to joining ODU, he spent the last 7 years as a researcher at the Texas Transportation Institute and the Virginia Transportation Research Council, and served as a visiting assistant professor at the University of Virginia. Dr. Fontaine teaches courses in design, transportation operations, safety, and intelligent transportation systems. He is the recipient of several awards, including two best paper awards from the Transportation Research Board Work Zone Traffic Control Committee, the Institute of Transportation Engineers Dan Fambro Award, and the Jack Dillard and Horizon awards from the Virginia Transportation Research Council. Dr. Fontaine has served as the principal investigator on over \$1 million in research, and has published almost 40 technical reports and journal articles.



*Dr. Michael D. Fontaine, P.E.  
Assistant Professor*

*E-mail: MFontain@odu.edu*

## Adjunct Transportation Faculty Profiles

Mr. Dwight Farmer and Dr. Camelia Ravanbakht serve as adjunct faculty within the Civil Environmental Engineering Department. They serve as valuable resources in the educational program, and are active in teaching transportation classes.



*Mr. Dwight Farmer, P.E.,  
Hampton Roads Planning  
District Commission*

**Mr. Dwight Farmer** is an adjunct faculty member in the Civil & Environmental Engineering Department. He received a B.S. degree "With Distinction" in Civil Engineering from Virginia Tech, an M.S. degree in Civil Engineering from Carnegie Mellon University, and is a registered professional engineer. Mr. Farmer was awarded Government Engineer of the year award in 2004 by the Norfolk Branch of the American Society of Civil Engineers. Mr. Farmer was appointed by the Governor to the Virginia Rail Advisory Board in 2005 and has served as chairman and a member of numerous statewide advisory committees to the Virginia General Assembly, Virginia Department of Transportation and the office of the State Secretary of Transportation during the past two decades. These assignments have included a review of the Commonwealth of Virginia's public infrastructure investment policies as well as the equity of statewide allocation formulas. Mr. Farmer's tenure with the Hampton Roads Planning District Commission has encompassed a variety of technical engineering and planning issues, regional and statewide policies as well as development and evaluation of alternative infrastructure financing. Mr. Farmer has an appointment with Old Dominion University in the Civil and Environmental Engineering Department as an Adjunct Associate Professor with over 25 years experience providing instruction in undergraduate and postgraduate studies in the field of Transportation Engineering.

**Dr. Camelia Ravanbakht** is an adjunct faculty member in the Civil & Environmental Engineering Department. She has a Ph.D. from North Carolina State University and more than 20 years of experience in research, development, and applications of transportation engineering and planning activities. She is the lead staff person for directing, managing and coordinating the Management, Operations, and Intelligent Transportation Systems Program in the Hampton Roads region. She has been instrumental in the planning and deployment of the region's ITS program through a cooperative process with representatives from local, state, federal governments and the private sector. She currently serves as the Co-Chairperson for the Hampton Roads Management, Operations and ITS Planning Committee. Throughout her tenure at the Planning District Commission, Dr. Ravanbakht has performed and provided outstanding technical assistance to local, state and federal agency officials in a variety of transportation engineering and planning programs. She has actively participated in and presented to public and private forums as well as community organizations. She has published numerous technical papers/documents and presented to national conferences and workshops.



*Dr. Camelia Ravanbakht  
Hampton Roads Planning Dis-*



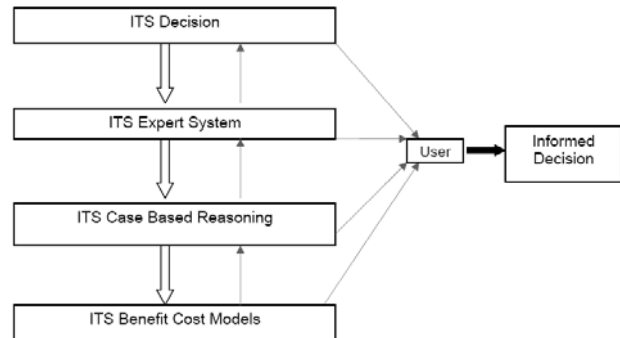
## ODU Transportation Research Focus

The ODU research program in transportation continues to expand at a rapid pace. Each issue will highlight some recent research in one of our core research areas. This issue focuses on two projects that are examining intelligent transportation systems.

### Tools for supporting intelligent transportation systems implementation decisions

*Asad Khattak, Joy Dahlgren, & Patrick McDonough*

Planners and engineers may consider both conventional capacity improvements and intelligent transportation systems (ITS) to address transportation problems. This work provides details of a system to help planners and engineers make informed decisions regarding ITS deployment. The ITS Decision concept is designed to provide comprehensive information about state-of-the-art ITS technologies in a relevant form—meaning that the user can access desired information without having to sift through irrelevant material. In addition, ITS Decision offers innovative tools to help users identify ITS appropriate for particular transportation problems. An expert system queries the user about specific conditions, diagnoses the problem, and suggests ITS remedies. For instance, if the problem is incident-induced congestion, the suggested solutions might be adopting service patrols and installing message signs. The case-based reasoning tool lets users match historical cases that are most similar, and see the impacts, e.g., benefits and costs as well as qualitative information about the program. Given the still limited penetration of ITS into appropriate settings, the expert system and case-based reasoning tools are meant to stimulate greater deployment of promising technologies in localities that have not adopted such systems. (In *Transportation Research Record* 1944, TRB, 2006.)



Online sites and documents available at: <http://database.path.berkeley.edu/reports/index.cgi?>

### Traffic Management Applications of Wireless Geolocation Technology

*Michael Fontaine and Brian Smith*

Wireless location technology (WLT)-based traffic monitoring offers an opportunity to expand the size of the transportation network being monitored at a lower cost than point detection. In WLT-based monitoring, the locations of individual wireless devices (like cellular phones) are sampled anonymously. By tracking a series of positions for devices in vehicles, it is theoretically possible to estimate the average travel speed on a road. While the concept of WLT-based monitoring is attractive, past results have been mixed. Field tests have been successful at locating vehicle positions, but have not been able to generate traffic information of the quality or reliability required for most applications. This research evaluated the performance of WLT-based monitoring system through a combination of controlled testing on simple networks and case studies on simulated real-world networks. The results showed that well-designed monitoring systems could produce accurate results although there were some situations where performance could be improved. Guidelines for design and use of WLT-based systems were generated and future avenues to improve system performance were noted. This project was sponsored by the *Virginia Department of Transportation*.

Online documents available: <http://www.virginiadot.org/vtrc/main/online%5Freports/pdf/05-r17.pdf>



## Accomplishments of ODU Transportation Program

There have been a number of accomplishments for the transportation faculty in 2006. The academic year began with a successful inception of the ODU transportation program and the development of a strategic plan. The groundwork for the graduate program in transportation has been developed, and a number of funded research projects have been initiated. The faculty are going to present a number of research papers at the Transportation Research Board Annual Meeting to be held in Washington D.C. in January 2007. The TRB Annual Meeting is an excellent opportunity for the program to share its most innovative research, while receiving valuable input from colleagues in transportation. Some highlights of 2007 are discussed below.

### Publication and Conference Presentation Successes

We are pleased that the transportation faculty will present seven research papers at the upcoming Transportation Research Board meeting in Washington, D.C. Some of the papers involve graduate students as co-authors—reflecting the emphasis that we place on developing a workforce that is exposed to research and a solid curriculum. The research papers are:

1. Fontaine M. and S. Read, *Evaluation of Highway Safety Corridors*.
2. Fontaine M., B. Smith, A. Hendricks, and W. Scherer, *Wireless Location Technology-based Traffic Monitoring: Preliminary Recommendations to Transportation Agencies Based on a Synthesis of Experience and Simulation Results*.
3. Fontaine M. and P. Edara, *Assessing the Benefits of Smart Work Zone Systems*.
4. Shay E. and A. Khattak, *Autos, Trips and Neighborhood Type: Comparing Environmental Measures*.
5. Fan Y. and A. Khattak, *What Can Activity Engagement Tell Us About Daily Drive Time and Walking Time?*
6. Khattak A., Y. Fan, and E. Shay, *What do Intelligent Transportation Systems Publications and Patents Tell Us?*
7. Son H., M. Fontaine, and B. Park, *Field Evaluation of Rational Speed Limits*.

These papers reflect diversity of the ODU Transportation Program research agenda, with topics that include transportation operations, intelligent transportation systems, planning, and traveler behavior.

### Active Research Projects

The faculty have been successful in bringing new transportation research projects to ODU, with 10 projects either being initiated or transferred to ODU. The active research projects are:

1. Fontaine, M.—Principal Investigator, Evaluation of Raised Pavement Marker Failures, Virginia Department of Transportation, 2006-2007.
2. Fontaine, M.—Principal Investigator, Evaluation of Truck Lane Restrictions, Virginia Department of Transportation, 2004-2006
3. Fontaine, M.—Principal Investigator, Sampling Issues in Wireless Location Technology-Based Traffic Monitoring Systems, Virginia Department of Transportation, 2005-2006
4. Fontaine, M.—Co-Principal Investigator, Demonstration and Evaluation of Rational Speed Limits, Federal Highway Administration, 2004-2007.
5. Fontaine, M.—Co-Principal Investigator, Private Sector Provision of Congestion Data, National Cooperative Highway Research Program, 2005-2006.
6. Khattak A.—Principal Investigator, Economic Impact of Traffic Incidents on North Carolina's Interstate Facilities, NC Department of Transportation. 2005-2006.
7. Khattak A.—Co-Principal Investigator, Effectiveness of Traveler Information Tools, North Carolina Department of Transportation. 2005-2007.
8. Khattak A.—Principal Investigator, Multi-Year Travel Modeling Project, North Carolina Department of Transportation, 2004-2007.
9. Khattak A.—Principal Investigator, Innovative Large Truck Speed Enforcement on Interstate Highways, US Department of Transportation through the Southeastern Transportation Center, University of Tennessee at Knoxville, 2005-2006.
10. Khattak, A.—Principal Investigator, Developing Case-Based Reasoning Modules for High-Impact Intelligent Transportation Systems Technologies, California Department of Transportation, 2006-2007.

## 2007 Transportation Research Board Presentations

The ODU Transportation Program will be well-represented at the 2007 TRB Annual Meeting, with 7 papers accepted for presentation. A sample of the research that will be presented is included on the next two pages.

### What Can Activity Engagement Tell Us About Daily Drive And Walking Time?

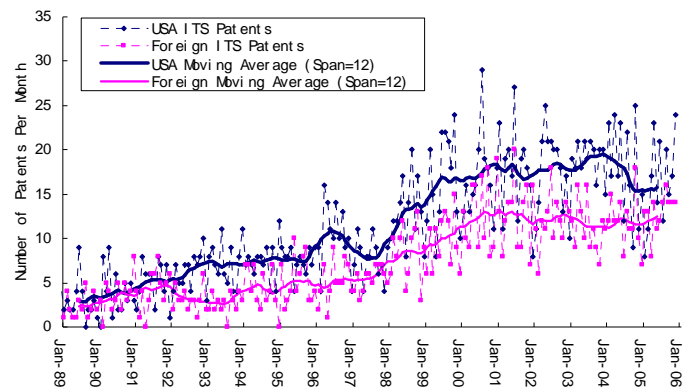
*Yingling Fan and Asad Khattak*

Time use is a key aspect of human life and a good understanding can lead to more appropriate transportation and land use policies. While time use issues have been explored extensively from the perspective of activity participation and travel, there is still a need to understand how people allocate time to ignored activities such as walking versus driving. In particular, more walking and less auto use can have a variety of health and environmental benefits. Using daily time use and demographic data from the 2003 American Time Use Survey (ATUS), this work develops an empirical framework to examine the interplay between travel time allocation (walk and drive), activity engagement (what is done, where and with whom), individual/household socio-demographics, and spatial/temporal factors (metropolitan status, week-day/weekend). Tobit models show that walk and drive time allocation respond differently to activity engagement indicators and individual/household/environmental variables in terms of the effect size and direction. Discretionary activity (including leisure, recreation, spiritual and volunteer activities) is a stronger negative predictor of daily drive time, compared to work and shopping activity. Social and family events are associated with less auto use, compared to activities pursued by the individual alone. Living in metropolitan area leads to less daily drive time and more daily walking time. Results imply that compact urban form is associated with reduced auto use.

### What Do Intelligent Transportation Systems Publications and Patents Tell Us?

*Asad Khattak, Yingling Fan, and Elizabeth Shay*

Intelligent transportation systems (ITS) have attracted much attention and have seen rapid growth since their first mention in 1986. As substantial efforts by both the public and private sectors have gone into the ITS field, tracking its progress and evaluating its development have become essential to transportation researchers, investors, and policy-makers. To this end, we first developed a comprehensive database of ITS publications and patents. Then we used time series analysis and content analysis on ITS-related publication and patent documents to understand general trends in ITS, the impact of federal ITS programs, the development of ITS across individual sub-fields, and how ITS technologies cluster together. The results provide insights into the academic endeavors, commercially motivated innovation activities, and the status of compatible ITS technologies in the ITS field.



Monthly ITS-related patent time series in USA and foreign countries (1989-2005)

### Autos, Trips and Neighborhood Type: Comparing Environmental Measures

*Elizabeth Shay and Asad Khattak*

Understanding the link between the environment and travel may inform policy that has the potential to influence household travel behavior. Transportation planners have long recognized a role for the environment in travel behavior, although techniques for incorporating the built environment in travel research remain under development. This study uses neighborhood type, along with other common household measures, as independent variables in models for auto ownership and travel. Further, we compare three different approaches to incorporating the built environment in modeling and assess their ability to predict auto ownership and use across different types of neighborhoods. Using 1) simple environmental measures, 2) factors (indices) generated by factor analysis, and 3) a neighborhood typology derived from cluster analysis of the factors, we find the factors to provide information the clusters and simple measures do not. Further, we find that auto ownership relates to household variables, while trip generation is more sensitive to built environment factors, as well as household variables and auto ownership.

## 2007 Transportation Research Board Presentations

### Evaluation of Highway Safety Corridors

*Michael Fontaine and Stephen Read*

**BEGIN**

#### HIGHWAY SAFETY CORRIDOR

##### FINES FOR MOVING VIOLATIONS

**\$200 MINIMUM - CRIMINAL OFFENSES**  
**\$500 MAXIMUM - TRAFFIC INFRACTIONS**

Several state transportation agencies have recently started creating highway safety corridor (HSC) programs in an effort to reduce crashes, injuries, and deaths on roads with a high rate and frequency of crashes. HSC programs use a coordinated campaign of education, enforcement, and low-cost engineering measures to address safety issues. Fines for moving violations are increased in these HSCs as a way to strengthen the potential impact of enforcement. Virginia passed legislation establishing a state HSC program in 2003. This legislation increased fines for moving violations within the HSC, subject to a \$200 minimum for criminal infractions and \$500 maximum for traffic offenses. This paper documents the initial evaluation of the HSC program on two interstate HSCs. Travel speeds before and after the HSC designation are examined at one site, while crash data are presented at both interstate locations. Public opinions on the HSC program are also discussed. The results of the analysis indicate that little improvement in speed compliance and safety was observed at the congested, urban interstate site. Significant reductions in crash frequency were observed at the more rural interstate location, with a reduction in crash frequency of almost 30 percent being estimated in the most recent year. While results to date have been mixed for the two corridors, the results do show promise. More consistent effects may be possible if more dedicated resources were invested in the program.

### Assessing the Benefits of Smart Work Zone Systems

*Michael Fontaine & Praveen Edara*



Smart work zones (SWZs) are being deployed around the United States as a way to inform drivers dynamically about traffic conditions within a work zone. SWZs use sensors to detect traffic flow conditions on the work zone approaches. These data are then used to alert drivers of congestion or speed differentials in an effort to improve operations or safety. Agencies that are considering deploying SWZs are often faced with the challenge of trying to justify the cost of an SWZ system to decision makers who may be more inclined to use the funds for more traditional maintenance purposes. Although a number of states have evaluated SWZ systems, there has not been much effort to identify trends across multiple tests or extend those findings to predict likely impacts of proposed deployments. This paper synthesizes the results of a number of deployments of SWZ technology and identifies some common trends in performance. The data are then used to develop benefit-to-cost (B/C) ratios for a variety of traffic and diversion alternatives. The B/C ratios are then used to identify some project duration thresholds at which an SWZ would be beneficial based on user delay savings for a two-lane directional segment.

### Wireless Location Technology-based Traffic Monitoring: Preliminary Results

*Michael Fontaine, Brian Smith, Aron Hendricks, and William Scherer*

There has been a growing interest in using anonymous tracking of wireless devices as a way to generate travel time and operational data cost-effectively. Unfortunately, there are relatively few independent, quantitative evaluations of these systems. The evaluations that exist are often not widely available, so agencies often enter into deployment agreements with a limited understanding of the abilities and limitations of this technology. This paper provides an overview of the results of past deployments of wireless probe monitoring systems and discusses a simulation effort to gain further insight into the predominant type of system on the market today, handoff-based monitoring systems. Past deployments show that early generation systems that used signal analysis and triangulation encountered significant problems in generating accurate speed estimates. More recent tests using handoff-based technology have shown improvement in data quality at some sites, but there still is not enough data to fully characterize whether those systems can consistently provide useful operational data. The simulation study indicates that the way in which the cellular network topology overlays the roadway network could be a critical determinant of overall system effectiveness. The simulation results indicate that speeds can often be estimated to within 5 mph of reality with handoff-based systems. Based on the synthesis of past deployments, it appears that transportation agencies have often not specified any performance requirements for deployed systems. Agencies may wish to specify minimum performance requirements for data accuracy and availability as a way to ensure that useful information will be generated.

## Transportation Engineering Degrees at ODU

The goal of the transportation educational program at ODU is to provide students with the knowledge and tools that they will need to succeed in the workforce. The undergraduate program provides a solid foundation in design, operations, and planning. At the graduate level, students learn advanced analytical tools and technologies to help address transportation problems. The graduate program in transportation offers Master's and Ph.D. degrees. Qualified full-time students pursuing a Master of Science or Ph.D. degree are eligible for funding through Research Assistantships. Students interested in learning more about the program are invited to contact Dr. Khattak or Dr. Fontaine.

### DEGREES & COURSEWORK

**Degrees** The Department of Civil & Environmental Engineering offers graduate programs leading to the following degrees:

- Bachelor of Science in Civil Eng (BSCE)
- Master of Science in Civil Eng (MSCE)
- Master of Engineering in Civil Eng (MECE)
- Doctor of Philosophy in Civil Eng (Ph.D. CE)

Bachelor's and Master's students build a solid foundation in engineering by taking a courses in transportation fundamentals, transportation planning, & operations. In addition, Master's students produce a Thesis or Project. Students can also take transportation courses through ODU Extension.

The Ph.D. program provides training in research methods that enables graduates to contribute to the development of substantive theory, knowledge, and scholarship in transportation engineering.

### **Undergraduate Transportation Coursework**

Provides knowledge of transportation and the inter-relationships between multiple transportation modes. Students can take the following courses:

- Roadway Design
- Transportation Fundamentals
- Transportation Planning
- Transportation Operations

**Graduate Coursework** Provides an extensive background in transportation engineering. Students may take the following courses:

Transportation Fundamentals  
 Transportation Planning  
 Transportation Operations I  
 Transportation Operations II

### RESEARCH & INTERNSHIPS

**Current Research** Faculty and students conduct research in the following areas:

- Transportation operations
- Transportation planning
- Modeling and simulation of transportation systems
- Transportation safety
- Intelligent Transportation Systems

**Student Publications** Graduate students are encouraged to co-author articles with faculty. Additionally, students are encouraged to present their research at forums, such as the annual Transportation Research Board meeting.

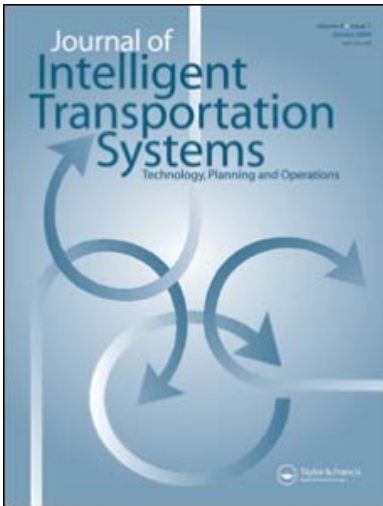
**Financial Assistance & Internships** Research and teaching assistantships are available to full-time students. These typically pay for student stipends and partial or full tuition.

Internships provide employment experience and the opportunity to develop professional skills. Students can work for these local ODUTP partners:

- Virginia Modeling, Analysis & Simulation Center
- Virginia Department of Transportation
- Hampton Roads Planning District Commission



## Journal Editing



### Submissions Welcome

The Journal of Intelligent Transportation Systems accepts submissions of original work. A complete list of instructions for the preparation of manuscripts is available on the journal's website:

<http://www.tandf.co.uk/journals/titles/15472450.asp>

### Journal of Intelligent Transportation Systems: Technology, Planning, and Operations

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Print ISSN: 1547-2450  
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Dr. Asad Khattak is the editor of Journal of Intelligent Transportation Systems. The Journal of Intelligent Transportation Systems is devoted to scholarly research on the development, planning, management, operation, and evaluation of intelligent transportation systems. Characterized by the application of information and communication technologies to transportation, such systems provide innovative solutions to contemporary transportation problems. They encompass the full scope of information technologies used in transportation, including control, computation and communication, as well as algorithms, databases, models, and human interfaces. The emergence of these technologies as a pathway for transportation is a relatively new field of research. The Journal of Intelligent Transportation Systems is particularly interested in research that leads to the development of such systems and improved planning and operation of the transportation system through the application of these new technologies. The journal also publishes papers that add to the scientific understanding of ITS impacts on accessibility, congestion, pollution, safety, security, noise, and energy and resource consumption. The journal is interdisciplinary and multi-modal, dealing with research in the fields of engineering, economics, planning, policy, business, and management, and in all forms of ground, air, and water transportation. Example topics include:

- Role of information systems in transportation, traffic flow and control, vehicle control, routing and scheduling
- Traveler response to dynamic information
- Planning for ITS innovations
- Evaluations of ITS field operational tests
- ITS deployment experiences
- Automated highway systems
- Vehicle control systems
- Tools/software for ITS analysis

A fully searchable FREE online sample copy of this journal is available by visiting: [www.tandf.co.uk/journals/onlinesamples.asp](http://www.tandf.co.uk/journals/onlinesamples.asp)

### Recent Content, Issue: Volume 10, Number 3 / July-September 2006

A High Accuracy Fuzzy Logic Based Map Matching Algorithm for Road Transport  
Mohammed A. Quddus, Robert B. Noland, Washington Y. Ochieng  
DOI: 10.1080/15472450600793560

New Methodology for Estimating Reliability in Transportation Networks with Degraded Link Capacities  
Haitham Al-Deek and Emam B. Emam  
DOI: 10.1080/15472450600793586

Analysis of Vehicle Positioning Accuracy Requirements for Communication-Based Cooperative Collision Warning  
Steven E. Shladover and Swe-Kuang Tan  
DOI: 10.1080/15472450600793610

A Wavelet Network Model for Short-Term Traffic Volume Forecasting  
Yuanchang Xie and Yunlong Zhang  
DOI: 10.1080/15472450600798551

## Transportation Program

Education, Research, and Public Service



ODU Transportation Program  
 Civil & Environmental Engineering Department  
 135 Kaufman Hall  
 Old Dominion University  
 Norfolk, VA 23529

**CEE.ODU**  
 .edu

Contact: *Asad Khattak, Batten Endowed Chair Professor and  
 Director of ODU Transportation Program*  
 Phone: (757) 683-6701 Email: [AKhattak@odu.edu](mailto:AKhattak@odu.edu)

### Mission

The mission of the ODU Transportation Program (ODUTP) is to contribute to the advancement of transportation systems in three ways:

- The education of transportation professionals,
- The development of knowledge that stimulates applications of new strategies/technologies, and
- The dissemination of knowledge to transportation practitioners and other stakeholders.

We achieve these goals by offering students a broad curriculum, faculty with diverse backgrounds and research interests, and professional development opportunities in the Hampton Roads area.

Our primary goals are 1) to prepare transportation engineers for practice in local, regional, and state transportation agencies as well as the private sector, and 2) to mentor transportation researchers and educators. Additionally, students are encouraged to expand their transportation knowledge by taking courses in related areas that include logistics, psychology, engineering management, and simulation.

### Sponsors

The Virginia Department of Transportation directly supports research activity at the ODU Transportation Program. In addition, core ODU transportation faculty have research funding from the following:

- California Department of Transportation
- North Carolina Department of Transportation
- US Department of Transportation
- US Environmental Protection Agency

### Faculty

#### Core Transportation Faculty

**Dr. Asad Khattak**, Frank Batten Endowed Chair Professor. Transportation Planning, Safety, and Intelligent Transportation Systems.

E-mail: [AKhattak@odu.edu](mailto:AKhattak@odu.edu)

**Dr. Michael Fontaine**, Assistant Professor. Transportation Operations, Safety, and Intelligent Transportation Systems.

E-mail: [MFontain@odu.edu](mailto:MFontain@odu.edu)

#### Associated Adjunct Faculty

**Mr. Dwight Farmer, P.E.**, Hampton Roads Planning District Commission

**Dr. Camelia Ravanbakht**, Hampton Roads Planning District Commission