



The Morgan  
State University  
National Center  
for Transportation  
Management,  
Research &  
Development  
Newsletter

# The NTC Today

FALL 2014

**2** Director's Message

**4** Research

**6** MDOT/MSU  
Internships

**7** MDOT Leaders  
Tour Labs



*Students celebrate completing the Summer Transportation Institute, which lets them explore the field of transportation.*

## A Driving Force STI interests students in transportation

Two driving simulators, flanked by large screens displaying images of a highway, await the 20 high school students enrolled in the Summer Transportation Institute, who arrive on a wave of energy and laughter.

They rush in to examine the equipment, eager to try it.

"I have my permit, so I should get to go first," one student suggested.

Dr. Anam Ardeshiri, a recent doctoral graduate of Morgan State University who explained the importance of transportation research

to the students, says, "They get here and they want to jump in – they haven't done this in the real world."

Their inexperience is quickly apparent; one driver keeps drifting onto the rumble strips, causing the simulator to shake, while another is so timid she keeps braking in the middle of the highway. Fellow students call out instructions and encouragement, and, as one driver veers close to construction cones, everyone shouts in unison, "What are you doing?"

It's another day of fun learning,

**Continued on page 3**

## NTC part of \$5 million grant

The U.S. Department of Transportation's Office of the Assistant Secretary for Research and Technology announced on June 20, 2014, that two University Transportation Centers (UTCs) will receive a total of \$10.32 million in grants to advance research and education programs that address critical transportation challenges.

The University of Virginia and the University of Washington will each receive \$5.16 million for fiscal years 2013 and 2014. Headquartered at the University of Virginia, the Mid-Atlantic Transportation Sustainability University Transportation

**Continued on page 8**



# A Message from the NTC Director

DR. ANDREW FARKAS



This Fall Semester I am on sabbatical, and I have left the NTC in Dr. Hyeon-Shic Shin's and the rest of the staff's capable hands, but I am doing interesting transportation research on a topic that is new for me.

Earlier, I had applied for a small fellowship through the Think Visegrad think tank, an organization funded by four Central and Eastern European Countries (CEE), Poland, Czech Republic, Slovakia, and Hungary.

My topic of research is the policy implications and viability of rail land bridges across Eurasia. Land bridges in North America have diverted some maritime shipments to transcontinental rail. China and Europe are interested in similar service across Eurasia. According to the EU, almost all of the trade between China and Europe travels by sea; yet, CEE, strategically located between Western Europe and China, could provide links, origins, and destinations for land bridges. However, in Eurasia insufficient investment in infrastructure and rolling stock, incompatible systems and operations, and numerous border crossings are daunting. The recent geopolitical strife in Ukraine adds to the challenges.

I hope to identify transport options; pinpoint economic and physical constraints within Hungary's railways network in particular, such as low-capacity tunnels, bridges, links, and intermodal facilities; recommend investments to improve efficiency of intermodal transport; and suggest likely economic development impacts.

When I return later in the semester, I will change gears and conduct research on electric vehicles and their owners' travel behaviors in Maryland. This research under the auspices of the University of Virginia MATS University Transportation Center (of which we are a member) should help cement our role in the center's environmental sustainability focus. Both of these disparate topics show the variety and breadth of transportation research and the exciting times we live in.

I would also like to announce that Dr. Shin has moved on to a faculty appointment with the School of Architecture and Planning. We wish him well, but he's not going very far because we are in proximity with the School at CBEIS, and he's got much more research to do for the NTC. ■

"Both of these disparate topics show the variety and breadth of transportation research ..."

## ABOUT THE CENTER

The National Transportation Center (NTC) at Morgan State University is committed to transportation research and education that support the well-being and economic development of communities.

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### Questions? Comments?

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# STI takes students on a transportation ride

From page 1

part of a four-week program at the National Transportation Center at Morgan State University that includes activities such as building a solar-powered car and field trips involving different forms of transportation.

The program exposes students to transportation systems, concepts and careers while enhancing their academic and interpersonal skills. They also see careers that depend on STEM skills – science, technology, engineering and math.

"This summer, I really didn't have anything to do. My church gave out fliers for this and said we could learn about

new careers," says Michah Murphy, 14. "I heard about the \$250 stipend and said, 'That's cool.'"

The program itself turned out to be cool, too.

"It's so fun, and I learned there are more careers than just driving buses," Murphy says. "They need lawyers, they need engineers, they need scientists. The trips are really informative, especially the harbor cruise. I'd never been out to the Key Bridge before. In the water you get to see the buildings and stuff – it's really different."

Terray Phifer-Matthews, 17, heard about the program from his grandmother.

"I thought it would be like a summer camp with a bunch of rules," he said, "but it's a whole lot better. We did really cool projects and took trips – it's a fun place to go for four weeks."

What struck him the most was the role of pipelines in transporting goods.

"I learned that pipelines are a part of transportation. I thought they were just like for sewage. But they move stuff like the gas that goes to your house. That blew me away."

Students also enjoyed spending time on Morgan's campus – the dining

hall, described as "crazy good," was a particular favorite.

"I had never been on a college campus before – now I know what it's like," said 14-year-old Jamilah Johnson, who, impressed by the salaries in the field, is now considering a career in transportation. "I liked how every trip we went on related to transportation."

The Summer Transportation Institute, now in its 18th year at Morgan, is part of a national program funded by the Federal Highway Administration.

The National Transportation Center at Morgan is an outgrowth of the federally funded University Transportation Centers program. ■



## 2014 Fellows and Interns

### 2014 EISENHOWER FELLOW

Fathy Elgendi

### 2014 MSU/SHA INTERNS

Ariel Butler  
Roderick Howell  
Rodney Kono  
Joshua Lee  
Adreina McCullum  
Jordan Ogburn

Bashan Prah  
Jacquae Rubin  
Akeem Stephenson  
Kayla Thomas

### 2014-2015 MSU/MDOT INTERNS

Ademola Abodunrin  
Namita Acharya  
Gareth Adams  
Obianuju Ani  
Nigel Balram

Elizabeth Deveau  
Frank (Farokh) Hejazi  
Uchenna Ifeagwazi  
LaTisha Johnson  
Kaveh Bakhsh Kelarestaghi  
Isreal Odebode  
Olushhola Ogundele  
Ashley Seymour  
Suyash Shrestha  
Genevera Smith  
Cedric Southerland

## Teachers and Transportation

The NTC's Fall STEM Teacher Transportation Institute gives Baltimore City middle and high school teachers a chance to earn achievement units (AUs) through the Center for Continuing and Professional

Studies at Morgan State University. Held on Saturdays, the free program offers unique learning experiences, opportunities to meet industry professionals and a chance to share with fellow educators.



NEW RESEARCH PROJECTS

Environmental and Safety Attributes of Electric Vehicle Ownership and Commuting Behavior: Public Policy and Equity Considerations

Dr. Andrew Farkas, Dr. Hyeon-Shic Shin

Mitigating Pollutants from Highway Infrastructure for Total Maximum Daily Load (TMDL) Compliance: Monitoring Efficacy of Best Management Practices and Advancing Decision Support

Dr. James Hunter, Dr. Dong Hee Kang

Multi-layered Integrated Urban Freight Delivery Network – Phase I: Identification of Policy Preferences based on Qualitative and Conjoint Analysis

Dr. Hyeon-Shic Shin, Dr. Michael Callow

ONGOING RESEARCH PROJECTS

Measuring User Acceptance of and Willingness-to-pay for CVI Technology

Dr. Hyeon-Shic Shin, Dr. Michael Callow, Dr. Andrew Farkas, Dr. Young-Jae Lee

Durability Assessment of Prefabricated Bridge Elements and Systems

Dr. Monique Head

Connected Vehicle-Infrastructure Application Development for Addressing Safety and Congestion Issues Related to Public Transportation, Pedestrians, and Bicyclists

Dr. Andrew Farkas, Dr. Kitty Hancock, Dr. Young-Jae Lee, Dr. Hesham Rakha

Needs, Barriers, and Analysis Methods for Integrated Urban Freight Transportation

Dr. Hyeon-Shic Shin, Dr. Paul Schofeld (University of Maryland), Dr. Avinash Unnikrishnan

Measuring Economic Contribution of Freight Industry to the Maryland Economy

Dr. Hyeon-Shic Shin, Dr. Sanjay Bapna

Research Product Transfer for Local Calibration Factors of the Highway Safety Manual (HSM) and Integrated Surrogate Safety Assessment Framework

Dr. Hyeon-Shic Shin, Dr. Young-Jae Lee, Dr. Byungkyu “Brian” Park

Durability Assessment of Prefabricated Bridge Elements and Systems

Dr. Monique Head

Structural Health Monitoring to Determine Long-Term Behavior of AFRP Composite Bars in Prestressed Concrete Panels for Field Development

Dr. Monique Head, Dr. Devin Harris (University of Virginia)

Stainless Steel Prestressing Strands and Bars for Use in Prestressed Concrete Girders and Slabs

Dr. Monique Head

Safety Analysis for the Prioritized Three Safety Improvement Locations on I-495

Dr. Hyeon-Shic Shin, Seyedehsan Dadvar

Highway Runoff Storm Water Management Potential Site Characterization Using NASA Public Domain

Dr. Frederick Wilson, Dr. Oludare Owlabi

Validation of Source Approval of HMA Surface Mix Aggregate using Spectrometer

Dr. Frederick Wilson, Dr. Oludare Owlabi

2013-2014 COMPLETED RESEARCH PROJECTS

Safety Analysis for the Prioritized Three Safety Improvement Locations on I-495, August 2014

Dr. Hyeon-Shic Shin, Seyedehsan Dadvar

NTC Instructor Development Training for the Federal Motor Carrier Safety Administration’s National Training Center, June 2014

Dr. Hyeon-Shic Shin, Karen Rubinstein, Dr. Marilyn Rondeau, Dr. Niara Taru, Talcur Stubbs

Modeling the Dynamics of Drivers Dilemma Zone Perception Using Machine Learning Methods for Safer Intersection Control, April 2014

Dr. Andrew Farkas, Dr. Montasir Abbas, Dr. Sahar Ghanipoor Machiani, Dr. Philip M. Garvey

The Development of Local Calibration Factors for Implementing the Highway Safety Manual in Maryland, January 2014

Dr. Hyeon-Shic Shin, Dr. Young-Jae Lee, Seyedehsan Dadvar

Maryland Motor Carrier Program Performance Enhancement, January 2014

Dr. Hyeon-Shic Shin, Dr. Sanjay Bapna, Ramesh Buddharaju

Development of a Framework for Transit-Oriented Development (TOD), October 2013

Dr. Mansoureh Jeihani, Dr. Lei Zhang (University of Maryland)

Development of Exploring Travelers’ Behavior in Response to Dynamic Message Signs (DMS) Using a Driving Simulator, August 2013

Dr. Mansoureh Jeihani, Anam Ardeshiri

Identification of Technqiues to Meet PH Standard During In-Stream Construction

Dr. James G. Hunter, Dr. Dong Hee Kang, Dr. Mark Bundy





Wilson Parran, deputy secretary, Administration & Operations for MDOT, presented the interns with certificates at a luncheon.

## MDOT/MSU internships immerse students in real-world transportation issues

Eight graduate students from Morgan State University completed their year-long internships with the Maryland Department of Transportation (MDOT), an event celebrated in June with a luncheon featuring Wilson H. Parran, deputy secretary, Administration & Operations for MDOT.

Parran, who toured the engineering and research labs in The Center for the Built Environment and Infrastructure Studies (CBEIS), said, "It was exciting to see what's new and how it applies to transportation." A former assistant secretary, mission support for the Department of Natural Resources, he was especially impressed with the use of recycled road materials to create oyster habitat.

Parran also joked, "I was really glad to see what you're doing in terms of structural engineering and bridges," referring to a June 6 incident in which the State Highway Administration had to make a difficult decision to close a bridge on westbound I-70 and the

ramps to it from the Beltway at rush hour because of an issue with a beam. "But we were able to fix it in a weekend," he noted.

He praised the highly successful workforce development internship, formally known as the MDOT/MSU Graduate School Internship Program, for bringing in the next generation of transportation leaders.

"There are two reasons why this program is successful: the exceptional caliber of students from Morgan and the

dedication and commitment from the many mentors that we have."

The students had varied backgrounds, from civil engineering to landscape architecture, but they all were interested in transportation. The paid internship program, which began in 1981, gives students a chance to work for a year in the various organizations within MDOT and gain critical real-world experience. Students work part time during the school

Continued on page 8



From left, Dr. Andrew Farkas, NTC director; intern Britney Jackson; Wilson Parran, deputy secretary, Administration & Operations for MDOT; and Eugene DeLoatch, dean of the Clarence M. Mitchell, Jr. School of Engineering at Morgan

## MDOT leaders tour CBEIS

More than 50 managers from the Maryland Department of Transportation toured the laboratories in The Center for the Built Environment and Infrastructure Studies at Morgan State University on Sept. 24, 2014.

The day began with a brief overview of civil engineering and transportation programs at Morgan, the only university in the country to offer bachelor's, master's and doctoral degrees in transportation as well as a certificate program.

Then, the MDOT managers watched materials used in highway construction being tested in the Structures Lab, witnessed an earthquake in the Seismic Simulator Lab and took turns behind the wheel in the Travelers' Behavior Analysis and Simulation Lab. They also toured

labs dedicated to geospatial, environmental and geotechnical research and heard presentations on the research conducted at Morgan.

Louis Jones, director of Diversity for MDOT, said the tour was "just outstanding and marvelous."

As an alumnus, I'm impressed by how far the school has come – it's quite an accomplishment to be a leader in transportation."

In his closing remarks, Jones said, "This has just been phenomenal. I see so many opportunities in terms of collaboration."

The tours and presentations were hosted by the National Transportation Center. ■



Clockwise from top, visitors see the Seismic Simulator, hear presentations about Morgan's research and examine corrosion-resistant material in the Structures Lab; Gregory Butler of MDTA enjoys a spin in a driving simulator.



## Dr. Shin serves on symposium panel



Dr. Hyeon-Shic Shin, center, acting director of the National Transportation Center and an assistant professor in the Graduate City and Regional Planning Program at the School of Architecture and Planning at Morgan State University, joined a panel for a transportation symposium sponsored by Eastern Michigan University and the Conference of Minority Transportation Officials (COMTO).

He discussed long-term transportation planning and policy issues, emphasizing setting priorities based on the public's preference for vehicle technologies.



# Morgan's NTC part of consortium awarded grant

From page 1

Center (MATS UTC) is actually a consortium of six universities and includes Morgan State University's National Transportation Center (NTC).

The consortium has received the grant to research and develop energy-efficient and environmentally sustainable modes of transportation.

Morgan's share of the grant money will total about \$400,000. Other universities in MATS UTC are Virginia Tech, Old Dominion University, the University of Delaware, and Marshall University. The winning grant proposal, submitted in January, was selected from the federally designated Region 3, which includes

Virginia, West Virginia, Maryland, Delaware, Pennsylvania and the District of Columbia.

The grant funds research that directly supports the priorities of the USDOT to promote the safe, efficient and environmentally sound movement of goods and people.

The primary focus of MATS UTC is environmental sustainability of transportation, and projects include sustainable freight movement, which is particularly critical for the Mid-Atlantic region, home to major ports, highways and railroads; coastal infrastructure resiliency, another issue of concern to the region, where the

majority of the population lives in areas directly affected by sea-level rise and extreme weather events; energy-efficient urban transportation; enhanced water quality management; and sustainable land-use practices.

Morgan State University's NTC is an outgrowth of the federally funded University Transportation Centers program. The NTC advances U.S. technology and expertise in transportation, research and technology transfer on the university level. Morgan offers bachelor's, master's and doctoral degrees in transportation, as well as a certificate program. ■

## MDOT internships put students on the road to jobs

Continued from page 6

year and full time in the summer.

Joseph Moges, a civil engineering graduate student, interned in the Office of Traffic and Safety.

"It was an excellent learning experience, so much so that I got a full-time job within three months," he said. "I was exposed to a lot of traffic-engineering expertise. There's a big difference between on paper and being there. Seeing the software being used and the modeling done in real time was impressive, and that exposure to the software helped get the job."

Shiva Narooienezhad, an international student who graduated in May 2014, interned in the Maryland Transit Administration, getting a first-hand look at how a major metropolitan transit system works.

"The first thing I learned is how transportation systems are connected," she said. "I didn't know about scheduling — when a bus is late, it's late, but when you go and see why the buses are late you see so many people who are working really hard."

She praised the quality of the mentoring, which has been a key part of the

program's success.

"As an intern, you go through the government office and they spend the time to teach you something and get you involved in cases." She also gained marketable non-technical skills. "I learned how they conduct meetings and how to get involved in different issues — it was a really good experience for me."

Speaking at the luncheon, Dr. Eugene M. DeLoatch, dean of the Clarence M. Mitchell, Jr. School of Engineering at Morgan State University, said, "The students have solid academic preparation and this is the opportunity to get the hands-on experience we all know is so important."

Moges Ayele, who serves as a liaison between higher education and the federal government, said "The Federal Highway Administration applauds Morgan for this outstanding workforce development."

Two of the students have accepted jobs with MDOT while a third will be working for a consulting firm that does business with MDOT.

"Morgan State and MDOT have an excellent relationship," Ayele said. "This internship is an example of how success-



*Michael Walk, left, director of Service Development at the Maryland Transit Administration, mentored intern Shiva Narooienezhad.*

ful the state has been in establishing that collaboration."

Sixteen students are slated to begin the next cycle of the internship.

Dr. Andrew Farkas, director of the National Transportation Center, a federally funded research center at Morgan, said, "We've seen educational fads come and go, but without a doubt, an internship is a good idea from the beginning." ■