

**Program Progress Performance Report
for the
New England University Transportation Center
Massachusetts Institute of Technology**

**Federal Grant DTRT13-G-UTC31
Grant Period: September 1, 2013 – September 30, 2019**

Reporting Period: October 1, 2018 – March 31, 2019

**Submitted to
US Department of Transportation
Office of the Assistant Secretary for Research and Technology (OST)
April 29, 2019**

Project Title

University Transportation Centers Program – Region 1

DUNS number

00-142-5594

EIN number

04-210-3594

Recipient Account No

6928838



Joseph F. Coughlin, Director

coughlin@mit.edu

617.253.4978

Massachusetts Institute of Technology
77 Massachusetts Avenue, E40-279
Cambridge, MA 02139

REPORTING CATEGORIES

1. Accomplishments

1A. Research Projects

Major goals as stated in New England UTC Prospectus

Research Goal

- To conduct research in technology applications and systems integration with related work in policy, planning and human factors that improve transportation safety as well as further our understanding and realization of livable communities to support mobility across the lifespan.
- To support peer-reviewed investigations that address safety and livability by exploring and furthering research, policy, and practice in the application of ubiquitous intelligence, use of big data, and improved human performance

Note that the New England UTC has recently created eleven new research projects with the last FFY15 mod of funding received from DOT. Their project numbers run MITR25-47 through MITR25-57 and are included in the table of projects below, all under MIT.

Following is the list of the 48 research projects under this grant, and their current status:

Project No.	PI	Project Title	Status
MITR25-1	Abou-Zeid Ben-Akiva	Capturing the Relationship between Social Interaction and Travel Behavior Using Smart Phones	completed
MITR25-2	Caplice Caballero	High-Resolution Urban Freight Modeling in Cambridge, MA	completed
MITR25-3	Coughlin	Assessing Navigability and Livability of Public Transportation Systems	active
MITR25-4	Ellis Lavalliere	Transportation Workforce Health and Wellbeing	completed
MITR25-5	D'Ambrosio	Understanding the Adoption of and Education about New Auto Technologies among Older Adults	completed

MITR25-6	Frazzoli	Modeling the Impact of One-Way Car Sharing: An integrated data- and optimization-driven approach	completed
MITR25-7	Goentzel	Stochastic Analysis of Logistics Capacity in Disaster Response Networks	completed
MITR25-8	Gonzalez	Coupled Mobility Networks: A Data Driven Approach	completed
MITR25-9	Isaacson	Out and About in New England: Maintaining Active Life styles in Later Life	completed
MITR25-10	Lee	Effectiveness of Various Information Channels on User Training and Learning in Automobiles	completed
MITR25-11	Osorio	Optimal Road Traffic Operations for an Increasingly Autonomous and Connected Vehicle Fleet	completed
MITR25-12	Pentland Shmueli	Incentivizing Safer Driving Using Peer-Pressure	completed
MITR25-13	Reimer Dobres	Assessing the Effect of Typography on In-Vehicle Glance-Like Reading Across the Lifespan	completed
MITR25-14	Salvucci Murga	MALL Transit and Wider Economic Benefit Assessment	completed
MITR25-15	Sussman	Hub Stations As Catalysts for Regional Growth: The Case of New York Penn Station	completed
MITR25-16	Trancik	From Trip Data to the Energy Requirements of Personal Vehicle Travel	completed
MITR25-17	Zegras Pereira	Scenario Discovery for Resilient Urban Systems (or, The Future is "Big Data")	completed

MITR25-18	Zhao	Humanizing Travel: How E-hail Apps Transform Stakeholder Relationships in Taxi Services	completed
HVDR25-19	Glaeser	Transportation Stimulus Spending and Long Term Unemployment	completed
MITR25-47	D'Ambrosio Coughlin	Transit User Centered Empathy & Experience	active
MITR25-48	Coughlin	Shared Ride Service Drivers' Profiles & Perspectives	active
MITR25-49	Zhao	An Urban Agenda for Autonomous Vehicles: Embedding Planning Principles into Technological Deployment	active
MITR25-50	Patskanick D'Ambrosio Coughlin	Transit Fare Discount Processing Improvements for Disadvantaged Populations	active
MITR25-51	Raue Coughlin	Perceived Risk of Loss of Driving & Alternative Mobility Planning	active
MITR25-52	Sheffi Winkenbach	Urban Last-Mile Transportation 4.0	active
MITR25-53	Seppelt Coughlin	Consumer Use & Adoption of Advanced Vehicle Systems: Leveraging Individual Variation in Visual Perception to Optimize Display Design	active
MITR25-54	Reimer	Exploration of Factors Impacting the Successful Adoption of External Vehicle Interfaces	active
MITR25-55	Brady Coughlin	Understanding Perceptions of Transportation for Livable Communities	active
MITR25-56	Zegras	Advanced Behavioral Analysis of High Resolution Mobility Data	active

MITR25-57	Lee	IoT Home Transportation & Trip Substitution Services	active
HVDR25-20	Gomez-Ibanez Fagan	The Experience with Managed Toll Lanes	completed
HVDR25-21	Howitt	Recreating Livable Communities after Catastrophe: Managing the Recovery from Japan's Earthquake, Tsunami, and Nuclear Disaster of 2011	completed
HVDR25-22	Mayne	The Politics of Transport Policy in the Greater Copenhagen Region, Part 2	completed
HVDR25-23	Shoag	The Local Effects of the American Recovery and Reinvestment Act on Economic Activity and Traffic Safety	completed
UMAR25-24	Christofa Knodler	Operational and Emission Analyses of Roundabouts under Varied Vehicle and Pedestrian Demands	completed
UMAR25-25	Fisher Knodler Zafian	Evaluating the Effect of Google Glass on Driver Distraction	completed
UMAR25-26	Gao	Routing Policy Choice Models in Stochastic Time-Dependent Networks: The Stockholm Case Study	completed
UMAR25-27	Gonzales	Route Choice in Congested Grid Networks	completed
UMAR25-28	Knodler Fisher	A Driving Simulator Evaluation of Driver Distraction and Traffic Control Device Comprehension for At-Grade Railroad Crossings	completed
UMAR25-29	Krishnamurty	An Innovative Design to Retrofit Seatbelts in Motorcoaches	completed
UMAR25-30	Ni Wang	Supplementary Vehicle Positioning to Connected Vehicles	completed
UCNR25-31	Atkinson-Palombo Garrick	A Multi-Scalar Model to Identify the Causes of Decreased Vehicle Miles Traveled (VMT) in the United States	completed

UCNR25-32	Garrick Atkinson-Palombo	Factors Contributing to the Decrease in Traffic Fatality Rates for Young People in America	completed
UCNR25-33	Ivan Ravishanker Townsend	Social Network Effects on Attitudes about Pedestrian Street Crossing Behavior	completed
UCNR25-34	Konduri Dalal	Exploration of Human Psychological Factors Underlying Mobile Phone Usage Behaviors while Driving	completed
UCNR25-35	Lownes	Clustering Algorithms for Transit Network Design	completed
UMER25-36	Garder	Deficient Bridges and Safety Information	completed
UMER25-37	Rubin Garder	Automated Vehicles: Economic Incentives for Environmental Benefits and Safety	completed

Accomplishments under the New England UTC's research goal

Project MIT25-47

Transit User Centered Empathy & Experience

The research team has been in the process of preparing the study protocol and identifying students to work on data collection for the project. The researchers have been in contact with a research team that implemented a similar project in 2018 to explore spaces in the London Tube/Transport for London system in order to learn from their experiences collecting data in London and to leverage these in designing the protocol to collect data from US transit sites.

Project MITR25-49

An Urban Agenda for Autonomous Vehicles: Embedding Planning Principles into Technological Deployment

We have developed a database of the head transportation and planning officials for all cities of more than 100,000 people in the country (there are a total of 307 such localities). We contacted each of them and asked them to complete a web survey; our response rate was roughly 25 percent. We have also conducted telephone interviews of about half an hour each with a randomly selected sample of 27 public officials who responded to our first web survey. Based on the preliminary analysis, we find that 1) few local governments have commenced planning for AVs; 2) cities with larger populations and higher population growth are more likely to be prepared; and 3) while local officials are optimistic about the technology and its potential to increase safety while reducing congestion, costs, and pollution, more than a third of respondents worried about AVs increasing vehicle-miles traveled and sprawl while reducing transit ridership and local revenues.

Project MITR25-50

Transit Fare Discount Processing Improvements for Disadvantaged Populations

This research work began with field site visits. Field observation of senior CharlieCard sign up events began in the fall. The initial visit included informal participant observation and interviews with stakeholders including card applicants, event volunteers, and council on aging staff. Besides informing the research, this outreach enhanced public understanding of the role of the New England UTC in transportation research. Similarly, the workshop held in January 28, 2019 with a panel of adults aged 85 and older in the Greater Boston/Cambridge-area included a questionnaire and set of focus groups centered on transportation, connecting the work of the NE UTC to MIT AgeLab and to that of a specific segment of active transit users. This workshop also leveraged a presentation from several representatives from the local transit system, including interns early in their transportation career. See the link “Lifestyle Leaders Hear from MBTA Associates on Transportation Innovations” in the media section for the full workshop details.

Project MITR25-51

Perceived Risk of Loss of Driving & Alternative Mobility Planning

The survey design has been completed and data collection is ongoing. Participants are asked about their living and transportation arrangements, but especially about the role driving plays in their lives and their perception of risks related to losing driving. The survey also includes questions about various forms of alternative mobility options that are or might be available to them including getting a ride from someone, access to public transportation, using a ride share service or a self-driving car. Participants are being asked about their knowledge and attitudes, the practicability and potential costs of these options.

Project MITR25-52

Urban Last-Mile Transportation 4.0

We have instituted a successful implementation of simulation-based optimization framework to design and evaluate flexible urban last-mile delivery systems. Based on open-source technology (Python, SimPy), we have established a simulation-based optimization framework to design and evaluate flexible urban distribution systems. Our model is being tested and calibrated on a real-world case study using public and private data sources for the borough of Manhattan in New York City.

Project MITR25-53

Consumer Use & Adoption of Advanced Vehicle Systems: Leveraging Individual Variation in Visual Perception to Optimize Display Design

Two recent manuscripts were published: one focused on defining “out-of-the-loop” driver behavior, and one on identifying information requirements for drivers using assistance automation systems. See the details under journal publications.

Project MITR25-54

Exploration of Factors Impacting the Successful Adoption of External Vehicle Interfaces

Three papers highlighting key aspects of the work have been submitted and accepted for publication at an international conference. See the citations under “Other publications, conference papers and presentations.”

Project MITR25-55

Understanding Perception of Transportation for Livable Communities:

A literature review was conducted to examine the existing research around the role of transportation in older adult’s migration decisions. Following the literature review, a survey was constructed with the aim of understanding people’s thoughts and experiences around transportation for older adults that have recently moved and those who are considering a move. The survey will then be distributed to national sample of older adults using the Qualtrics survey platform.

Project MITR25-56

Advanced Behavioral Analysis of High Resolution Mobility Data

We have developed a neural network (Taste-Net) to model the heterogeneous tastes of individuals and their choices. The model is written in Python using an open-source deep learning platform PyTorch. We have run numerous experiments with different hyper-parameters and show that we can discover interpretable behavior parameters, indicating nonlinear effects. We have also developed a network model for latent class choice modeling – LCCM-net. LCCM-net accommodates alternative estimation procedures (LBFGS, E-M, Adam). Through Monte-Carlo experiments we find the model has greater speed and accuracy than a traditional class membership model, including as sample size and problem complexity increases. Model application to a real data set shows dramatically reduced estimation time, nonlinear effects in the class membership model, improved prediction performance and more realistic taste parameters.

Project MITR25-57

IoT Home Transportation & Trip Substitution Services

Work was begun on data collection to understand transportation challenges and related technology use. An online survey was conducted to better understand people's current experiences related to transportation challenges and technology use. The data includes responses from 1,000 adults to questions on demographics, transportation and mobility challenges, technology experience, and daily activities and related issues. The next stage of the research is being worked on. For this second portion, we are developing an online exercise where respondents will be asked to decide between transportation options and services alternatives.

How the New England UTC's research results have been disseminated

Project MITR25-49

An Urban Agenda for Autonomous Vehicles: Embedding Planning Principles into Technological Deployment

We have submitted the first paper based on this research, which has just been accepted for publication [see citation under Journal Publications].

Project MITR25-52

Urban Last-Mile Transportation 4.0

Our findings are to be presented at a leading academic conference on Urban Logistics in June. Preliminary insights on our methodology and analyses will be shared at the 11th International Conference on City Logistics in Dubrovnik, Croatia on June 12-14, 2019.

Project MITR25-53

Consumer Use & Adoption of Advanced Vehicle Systems: Leveraging Individual Variation in Visual Perception to Optimize Display Design

The first part of this work, concentrated on defining out-of-the-loop driver behavior, was conducted as part of an April 2019 global discussion with a trilateral human factors working group: EU-US-Japan Trilateral Automation in Road Transport Working Group. There, Dr. Seppelt reported on the her AVT and AHEAD research, and discussed the topics of defining and measuring out-of-the-loop driver behavior, as well as the development of mental models of driver response to unexpected vehicle behavior. The second part of this work, which concentrated on identifying information requirements for drivers using assistance automation systems, was conducted with a colleague at the University of Wisconsin-Madison.

Project MITR25-54**Exploration of Factors Impacting the Successful Adoption of External Vehicle Interfaces**

Aspects of the work have been shared with industrial and federal stakeholders through an international working group focused on external vehicle interfaces (eHMI). The last major meeting was a workshop on eHMI held at AVS in July 2018 and a more recent informal discussion at the Transportation Research Board meeting held during January 2019.

Project MITR25-57**IoT Home Transportation & Trip Substitution Services**

The overall objectives and planned research activities of this research project have been communicated with and to multiple organizations. These organizations include current and potential partners of the MIT AgeLab, including research groups and companies. Students and educators from around the New England area that have visited the New England UTC and MIT AgeLab have also gotten overview of this research project.

Plans during the next reporting period to accomplish the New England UTC's research goal

No change on our major goals contained within our approved Application.

1B. Education Projects

Education & Workforce Goal

- To introduce transportation to all levels of education: K-12, undergraduate, graduate and continuing education.
- To place graduates into transportation fields.
- To provide current and developing methods, tools and insights to today's transportation workforce to support their capacity to build, operate and manage a safe and efficient transportation system.

Following is the list of the 2 education projects under this grant, and their current status:

Project No.	PI	Project Title	Status
HVDE25-38	Howitt	Teaching Case Study on Korea Ferry Disaster of April 2014	completed
HVDE25-39	Davis Altshuler	Transforming Urban Transport: A Set of Case Studies	completed

Accomplishments under the New England UTC's education goal

November 16, 2018

Joanne Moody named 2018 Outstanding Student of the Year

Joanna Moody is a consultant at the World Bank and a PhD candidate in transportation at the Massachusetts Institute of Technology, where she manages two research projects as part of the Energy Initiative Mobility of the Future consortium. Her doctoral research measures social status bias (car pride and bus shame) and how it relates to travel behavior and transportation planning. This research was awarded the Lee Schipper Memorial Scholarship in 2017. Ms. Moody previously served as the senior research assistant for a three-year research program with East Japan Railway Company that focused on understanding high-speed rail projects as sociotechnical systems. Her master's thesis was awarded the CUTC award for outstanding master's thesis in planning and policy in 2016. She also received a UTC Fellowship in 2014 and Eisenhower Graduate Fellowships in 2015 and 2016.

As our student awardee Ms. Moody received \$1,000 plus the cost of attendance to the 98th Annual TRB Meeting which took place in Washington, DC January 13-17, 2019.

All of the national UTC award winners were honored at the 28th Annual Outstanding Student of the Year Awards ceremony, which took place as part of the CUTC annual banquet on Saturday, January 12, 2019.

Ms. Moody was awarded the 2018 UTC Outstanding Student of the Year Award by the New England University Transportation Center at MIT for several reasons. Her research, academic record, professional experience and student leadership in the field of transportation studies all contributed to make her the award-winning candidate.

How the New England UTC's education results have been disseminated

Nothing to report

1C. Technology Transfer Projects

Technology Transfer Goal

- To increase the awareness and level of information concerning transportation issues facing New England.
- To further our well-established technology transfer and outreach activities.
- To engage the public and private transportation sectors throughout the New England Region and the nation.

Following is the list of the 2 technology transfer projects under this grant, and their current status:

Project No.	PI	Project Title	Status
MITT25-43	Coughlin	MIT Centralized Technology Transfer Initiatives	completed
UMAT25-44	Collura	UMass Centralized Technology Transfer Initiatives	active

Accomplishments under the New England UTC's technology transfer goal

Project UMAT25-44

UMass Centralized Technology Transfer Initiatives

The focus of this initiative is on workforce development and technology transfer.

In October, students participated in the "USafe 2018" an interactive event highlighting a range of safety issues on and off campus; the event was organized by the UMass Police Department and collaborating partners. The UMass ITE student chapter set up a booth at the event and talked to the students and Amherst community members about Rectangular Rapid Flashing Beacons and bicycle and pedestrian safety.

Also in October, students participated in a UMass Amherst Campus Parking Study. University of Massachusetts, Amherst partnered with VHB and the UMass ITE student chapter to conduct a campus wide parking study. UMass ITE members and undergraduate students were responsible for collecting parking lot counts for every parking lot on campus each hour for two days between the hours of 7am to 7pm. Members of UMass ITE were responsible for aggregating all of the parking lot counts into spreadsheets that were sent to VHB to do their analysis on campus parking.

October was a very busy month as faculty, staff and students organized and participated in the 2018 MassDOT Moving Together Conference, a one day conference which attracted a total of

869 attendees. Sessions included, among others, the following: "Unlocking Economic Development through Transit", "Innovative Technologies in Active Transportation", "Knowledge Sharing Round Tables (1) Statewide Pedestrian Plan Municipal Resource Guide for Walkability; (2) Dockless Bikeshare and Motorized Scooters as New Mobility Services, and (3) Complete Streets Implementation", "A Focus on Customers: Transit Planning for the People", "GeoDOT Overview – Building Municipal Partnerships through Data Sharing", and "Measuring Performance: MassDOT's Pedestrian Plan, Focus40 and Capital Investment Plan".

UMass/Amherst hosted the SaferSim Symposium (SaferSim is a Tier 1 University Transportation Center) In November. Students participated in a weekend filled with research presentations, a mini transportation camp, and networking.

UMass/Amherst was well represented at the 98th Transportation Research Board Annual Meeting held in January. More than 15 UMass/Amherst students attended where six students presented their research in either a poster or speaker session.

Also of note, students, faculty, and staff participated in 10 UMass/Amherst Transportation Engineering Program seminars, which included topics such as: "North South Rail Link – The Study of Connectivity Between the MBTA North and South Stations" (speaker Clay Schofield, Senior Engineer - Roads, Town of Barnstable, MA); "Public Works in Collaboration – The Beehive Bridge" (speaker Ted DeSantos, PE, PTOE Fuss & O'Neill); "Accounting for Bicycling Experience and Familiarity in Evaluating Bicycle Infrastructure Safety" (speaker Nick Fournier, PhD Candidate in Transportation University of Massachusetts Amherst); "Change Management and Risk: Role of the Design Engineer, Owner's Project Manager, Contractor" (speaker Andrea Lacasse, Project Engineer Tighe & Bond); "Is a Career in Railroading for Me?" (John Read, New England Railroad Club); "The Value of Infrastructure Investment - From Experience on the Boston Harbor Project and the Big Dig" (speaker Jennifer Pinck, President, Pinck & Co.); "Human Factors and Advanced Vehicle Technologies" (speaker Dr. Anuj K. Pradhan, Assistant Professor University of Massachusetts, Amherst Co-Director, HPL); "UMassSafe: Assisting State and Federal Transportation Agencies with Strategic Planning and Safety Programming" (speaker Robin Riessman, Director of UMassSafe); "Striving for Successful Infrastructure Projects" (speaker Bill Scully, Vice President – Municipal Transportation & Infrastructure Services, Green International); "From Data to Policy" (speaker Rachel Bain, Assistant Secretary for Performance Management & Innovation, MassDOT); "Modeling the Effect of New Commuter Bus Service on Demand, and the Impact on GHG Emissions: Application to Greater Boston" (Christopher Lyman, MS Candidate and Research Assistant UMass Transportation Center).

The Transportation Research Board of the National Academies of Sciences, Engineering, and Medicine awarded Outstanding Young Member Award to Eleni Christofa, Assistant Professor, Civil & Environmental Engineering Department. This is a national award given to only one person per year.

2. Products

Journal publications

Merat, N., Seppelt, B., Louw, T., Engström, J., Lee, J. D., Johansson, E., and McGehee, D. (2019). The “out-of-the-loop” concept in automated driving: Proposed definition, measures and implications. *Cognition, Technology & Work*, 21(1), 87-98. (Task 1)

Seppelt, B. D., & Lee, J. D. (2019). Keeping the driver in the loop: Dynamic feedback to support appropriate use of imperfect vehicle control automation. *International Journal of Human-Computer Studies*, 125, 66-80. (Task 2).

Yonah Freemark, Anne Hudson, Jinhua Zhao, Are cities prepared for autonomous vehicles? Planning for technological change by U.S. local governments, *Journal of the American Planning Association*, Accepted for publication in 2019.

Books, dissertations, or one-time publication

Nothing to report

Other publications, conference papers and presentations

AlAdawy, D., Glazer, M., Terwilliger, J., Schmidt, H., Domeyer, J., Mehler, B., Reimer, B. & Fridman, L. (2019 in press). Eye Contact Between Pedestrians and Drivers. Paper to appear in the Proceedings of the 10th International Driving Symposium on Human Factors in Driver Assessment, Training, and Vehicle Design. (<https://arxiv.org/pdf/1904.04188.pdf>)

Merchán, D., Lavenir, X., and Winkenbach, M. (2019) “A Microsimulation Approach to Evaluating the Impact of Dedicated Delivery Bays on the Efficiency and Emissions Footprint of Urban Logistics”. Accepted for presentation at the 11th International Conference on City Logistics, Dubrovnik, Croatia, June 12-14, 2019.

Schmidt, H., Terwilliger, J., AlAdawy, D. & Fridman, L. (2019 in press). Hacking Nonverbal Communication Between Pedestrians and Vehicles in Virtual Reality. Paper to appear in the Proceedings of the 10th International Driving Symposium on Human Factors in Driver Assessment, Training, and Vehicle Design. (<https://arxiv.org/pdf/1904.01931.pdf>)

Terwilliger, J., Glazer, M., Schmidt, H., Domeyer, J., Toyoda, H., Mehler, B., Reimer, B. & Fridman, L. (2019 in press). Dynamics of Pedestrian Crossing Decisions Based on Vehicle Trajectories in Large-Scale Simulated and Real-World Data. Paper to appear in the Proceedings of the 10th International Driving Symposium on Human Factors in Driver Assessment, Training, and Vehicle Design. (<https://arxiv.org/pdf/1904.04202.pdf>)

Y Han, FC Pereira, M Ben-Akiva, PC Zegras. Estimating Discrete Choice Models through Neural Networks: Why and How? A Case of the Latent Class Choice Model, accepted for presentation at 2019 International Choice Modeling Conference. (August 19-21, 2019).

Websites or other Internet sites

Nothing to report

Media

Lifestyle Leaders Hear from MBTA Associates on Transportation Innovations (January 28, 2019)
<http://agelab.mit.edu/news/lifestyle-leaders-hear-mbta-associates-transportation-innovations>.

Technologies or techniques

Project MITR25-56

Advanced Behavioral Analysis of High Resolution Mobility Data

We have developed a neural network (Taste-Net) to model the heterogeneous tastes of individuals and their choices. The current model is customized to Swissmetro dataset. It can be extended for general choice modeling. The model is written in Python using an open-source deep learning platform PyTorch. We have also developed a neural network model for latent class choice modeling (LCCM-net), built in Python with pyTorch. LCCM-net accommodates alternative estimation procedures (LBFGS, E-M, Adam). The class membership module can be specified as nonlinear with multiple hidden layers and activations. The model script is ready to be deployed as a general LCCM package.

Inventions, patent applications, and licenses

Nothing to report

Other products

Nothing to report

3. Participants & Other Collaborating Organizations

Organizations that have been involved as partners

Massachusetts Bay Transportation Authority (MBTA) – Boston, MA: Collaborative research

Prof. Francisco Camara Pereira. Professor, Technical University of Denmark (DTU)

Prof. Moshe Ben-Akiva. Professor, CEE, MIT

The University of Wisconsin

Toyota's Collaborative Safety Research Center

Transamerica

University of Wisconsin-Madison - Professor John D. Lee. - Collaborative Research

Waltham Council on Aging – Waltham, MA: Collaborative research

Other collaborators or contacts that have been involved

Qin Gao, Tsinghua University, discussions to brainstorm ideas for study design and analysis

University of Leeds - Professor Natasha Merat - Collaborative Research

4. Impact

The impact on the development of the principal disciplines of the program

Project MITR25-53

Consumer Use & Adoption of Advanced Vehicle Systems: Leveraging Individual Variation in Visual Perception to Optimize Display Design

The recent publications of two journal articles (see the citations under Journal Publications) together define what it means for a driver to be “in-” versus “out-of-the-loop” as well as provide the information requirements to support drivers in understanding and more appropriately relying on assistive features. This supports the overall aim of this research which is to design safer assistance automation systems that keep the driver informed and involved in the driving task.

The impact on other disciplines

Project MITR25-53

Consumer Use & Adoption of Advanced Vehicle Systems: Leveraging Individual Variation in Visual Perception to Optimize Display Design

It is expected that shared understanding of the out-of-the-loop (OOTL) concept among those working in the field will allow practitioners, technology manufacturers, policy makers, and regulators, to appreciate the likely consequences of different types of road vehicle automation on driver performance and safety. Reaching agreement on a shared definition of the concept, and how it can be measured should help researchers compare the outcomes from studies in this area, easing interpretation of research findings in different experimental contexts. Such an understanding should also promote the design of ecologically-valid and relevant studies—ones designed to appreciate the likely human factors implications, challenges, and benefits of road vehicle automation.

The impact on the development of transportation workforce development

Nothing to report

The impact on physical, institutional, and information resources at your university or other partner institutions

Nothing to report

The impact on technology transfer

Nothing to report

The impact on society beyond science and technology

Nothing to report

5. CHANGES/PROBLEMS

Nothing to report.

Additional information regarding Products and Impacts

Nothing to report

Outputs

Nothing to report.

Outcomes

Nothing to report.

Impacts

Nothing to report.