SAFER-SIM Accomplishments
April 1, 2021 – September 30, 2021

1. Accomplishments
1.1 Research Accomplishments

1.1.1 Peer-reviewed journal publications
Published


Submitted


2. Effects of Connected and Autonomous Vehicle Merging Behavior on MainLine Human Driven Vehicle, Lishengsa Yue, Mohamed Abdel-Aty, Zijin Wang, under review by Journal of Intelligent & Connected Vehicles


on steering behavior in virtual reality. Manuscript submitted for publication.


1.1.2 Book chapters
1. Yanhua Li, Xun Zhou, Menghai Pan. Graph Neural Networks in Urban Intelligence. Chapter in "Graph Neural Networks: Foundations, Frontiers, and Applications" (Eds. L. Wu, P. Cui, J. Pei, and L. Zhao), Springer, pp 1--720, July 2021.

1.1.3 Edited books
Nothing to report

1.1.4 Conference papers, posters, and symposia

Presented
the 2021 biennial meeting of the Society for Research in Child Development (online).


Accepted/Not yet presented


Athens, Greece.


Submitted


1.1.5 Paper/poster awards
Nothing to report

1.1.6 External grants related to SAFER-SIM
Awarded

1. EAGER-SAI: Exploring Pathways of Adaptive Infrastructure Management with Rapidly Intensifying Hurricanes
   Sponsor: National Science Foundation
   Amount: $140,000
   Duration: September 1, 2021-August 31, 2022
   Crash data analysis done under the SAFER-SIM project significantly helped to write the proposal for this project which will extend the analysis for a rapidly intensifying hurricane.

2. Elizabeth O’Neal received K99 Award from the National Institute of Child Health and Human Development

3. Eleni - Effectiveness of Bicycle Boxes in Massachusetts, Massachusetts Department of Transportation

4. Eleni - Building a Bicycle Simulator to Study Bicyclist-Connected & Automated Vehicle Interactions, Robert B. Brack Endowment funds for research (UMass)

5. Pradhan & Roberts - A Pilot Usability & Efficacy Evaluation of Hazard Anticipation-Attention Maintenance (HAAM) Training, Toyota Collaborative Safety Research Center, $150,000, 07/15/2021-02/28/2022
   The objective of this grant is to conduct an experimental evaluation of a hazard anticipation training program for novice teen drivers. The new proposal is very
similar to this SaferSim work as they both focus on developing and evaluating a driver training program that relies on active training and the 3M approach – mistake, mitigation, and mastery.

Submitted

1. “Parental Scaffolding of Children’s Prospective Control in Dynamic Perception-Action Tasks” Jodie Plumert (PI), Joseph Kearney (Co-PI), Kyle Rector (Co-PI). Grant application submitted to the National Science Foundation.

2. Shannon Roberts - CAREER: AUTOMATE – Advancing Underrepresented Groups Travel Opportunities by Mobilizing Automated Vehicle Technology for Equity, National Science Foundation, $578,000, 09/01/2022-08/31/2027, PI. This proposal seeks to establish and evaluate human machine interface design principles that positively influence marginalized occupants’ perception, engagement, and interaction with driving automation systems. This proposal naturally extends this current SaferSim work by applying it to a more diverse group of drivers.

3. Roberts - REU Site: RIDE - Research for Inclusivity and Driving Equity, National Science Foundation, $400,000, 01/01/2022-12/31/2024, PI. This proposal seeks to engage a diverse pool of undergraduate students in community-engaged transportation research. With the proposal, Prof. Roberts will work with undergraduate students on research projects that are similar to and even build off of this SaferSim project.

4. Roberts - SaTC: CORE: Medium: DRIVE - Decreasing cybersecurity Risk In Vehicles for law Enforcement, National Science Foundation, $1,200,000, 01/01/2022-12/31/2025, PI. This proposal seeks to establish and evaluate an evidence-based conceptual model that examines and enhances LEO knowledge of vehicle cybersecurity risk and resiliency. Through the proposal, Prof. Roberts will work with collaborators to develop a training program for law enforcement that will be of a similar format to this SaferSim project (e.g., understand how drivers respond to unexpected vehicle behavior).

5. NCHRP Proposal Project Number 17-100: Leveraging Artificial Intelligence and Big Data to Enhance Safety Analysis (Christofa, Knodler)

1.2 Leadership Development Accomplishments

1.2.1 Invited presentations


2. Dr. Mohamed Abdel-Aty: Delivering the Next Generation Roads Using Active Traffic Management Technology, Keynote, Road to Tomorrow R2T Virtual Conference, International Road Federation, July 2021.


6. Xun Zhou gave a talk at the Geographical and Sustainability Sciences Department at University of Iowa.


28. Presentation to Milliman Insurance on “CAVs” – June 24, 2021 - Riehl

29. Presentation to Public Risk Management Association on “CAVs” – June 14, 2021 – Riehl

1.2.2 Invited papers
Nothing to report

1.2.3 Invited workshops

2. Plumert, J. M. (July, 2021). Faculty Communications Workshop

1.2.4 Grant review panels
1. National Science Foundation Panel 2021 (Rector)

2. Shannon Roberts served on an NSF proposal review panel.

3. Shannon Roberts continues to serve on a BTSCR panel for BTS-01: Guidance for Employer-Based Behavioral Traffic Safety Programs for Drivers in the Workplace. For
the panel, she provided guidance for the contractor in terms of how drivers will respond to traffic safety programs.

4. Luxembourg National Research Fund (FNR) CORE programme [not a panel] (Christofa)
5. Freight Mobility Research Institute (FMRI) [not a panel] (Christofa)

1.2.5 Advisory committees
1. Dr. Mohamed Abdel-Aty: Transportation Research Board, National Research Council, National Academy of Sciences
2. Dr. Mohamed Abdel-Aty: Member, Committee on Safety Performance and Analysis (ACS20) – MEMBER (2014- 2021)
4. Dr. Mohamed Abdel-Aty: Co-Chair, ASCE Transportation Safety Committee, Nov. 2017-ongoing
5. Dr. Mohamed Abdel-Aty: Member, World Conference on Transport Research Society – WCTRS (2004 – ongoing)
8. Dr. Mohamed Abdel-Aty: Member, Editorial Board, Analytic Methods in Accident Research (AMAR) (2019- ongoing)
9. Dr. Mohamed Abdel-Aty: Member, Editorial Board, Transportation Research Part C (2019- ongoing)
10. Dr. Mohamed Abdel-Aty: ITF Roundtable on Artificial Intelligence in Road Traffic Crash Prevention, OECD, Feb. 10-12, 2021
11. Dr. Mohamed Abdel-Aty: Member International Road Federation Group of Experts on Road Safety (2011-ongoing)
12. Dr. Mohamed Abdel-Aty: Member, American Society for Engineering Education – ASEE (2002-2004 and 2010 - ongoing)
13. Dr. Mohamed Abdel-Aty: Board of Directors, National Safety Council (2021-2023)
14. Dr. Mohamed Abdel-Aty: ITF Roundtable on Artificial Intelligence in Road Traffic Crash Prevention, OECD, 2021
15. Dr. Yina Wu: Member, TRB Committee on Surface Transportation Weather (AH010) (2020 – ongoing)
16. UI Injury Prevention Research Center Executive Committee (Reyes)
17. UI Great Plains Center for Agricultural Health Internal Advisory Committee (Reyes)
18. Engineering Staff Advisory Council (Reyes)
19. Transportation Research Board of the National Academies: Standing Committee on Vehicle User Education, Training, and Licensing; and Young Driver Subcommittee, Member (Reyes)
20. Shannon Roberts is on the Center for Research on Families Steering Committee.
21. Shannon Roberts is on the Internal Advisory Board for the Institute of Diversity Sciences
22. TRR Editorial Board Task Force (Christofa)
25. Benjamin Colucci-Ríos, Member TRB Committee AHB55 Work Zone Traffic Control.
26. Benjamin Colucci-Ríos, Member Best Paper Award TRB Committee AHB55 Work Zone Traffic Control.
27. Benjamin Colucci-Ríos, Member of the Advisory Committee of the Puerto Rico - State Transportation Innovation Council (STIC).
28. Benjamin Colucci-Ríos, Member of the Advisory Committee of the US Virgin Islands - State Transportation Innovation Council (STIC).
39. Benjamín Colucci-Ríos, Member, TRB Standing Committee ACH50 Road User Measurement and Evaluation, 2020 - Present.
41. Benjamín Colucci-Ríos, Member, TRB Standing Committee ACP55 Traffic Control Devices, 2020 - Present.
44. Benjamín Colucci-Ríos, Friend, TRB Standing Committee AJE15 Workforce Development and Organizational Excellence, 2020 - Present.
45. Benjamin Colucci-Ríos, Co-Chair of the Traffic Enforcement Committee, International Road Federation (IRF). 2013 - Present
46. Benjamin Colucci-Ríos, Co-Chair Vision Zero Conference in Latin America Steering Committee, International Road Federation (IRF). 2021
47. Benjamin Colucci-Ríos, Member, Transportation Forensics and Risk Management (T-FARM), Institute of Transportation Engineers (ITE), 2018 – Present.
48. Benjamin Colucci-Ríos, Member, Transportation Education Council, Institute of Transportation Engineers (ITE), 2017 – Present.
49. Benjamin Colucci-Ríos, Member, Transportation Safety Council, Institute of Transportation Engineers (ITE), 2019 – Present.
50. Benjamin Colucci-Ríos, Member of the Executive Committee of the National Institute for Congestion Reduction (NICR), University Transportation Center (UTC). November 2019 - Present.
51. Benjamin Colucci-Ríos, American Association of State Highways and Transportation Officials (AASHTO) Co-Liaison representing the National Local Technical Assistance Program Association (NLTAPA), August 2019 - Present.
55. Benjamin Colucci-Ríos, Strategic Highway Safety Plan (SHSP) - Puerto Rico, stakeholder representing Puerto Rico LTAP - T2; Traffic Incident Management (TIM) workgroup, 2013 - Present.
56. Benjamin Colucci-Ríos, President of Transportation and Mobility Commision College of Engineers and Surveyors of Puerto Rico (CIAPR), August 2020 - Present.
57. Benjamin Colucci-Ríos, President of Highway and Transportation Task Force, American Society of Civil Engineers (ASCE) - Puerto Rico Section, June 2020 - Present.
59. Benjamin Colucci-Ríos, Puerto Rican Academy of Engineering (APrI) Founding Member 2010 - Present.
61. Alberto M. Figueroa-Medina, Transportation Education Council, Institute of Transportation Engineers (ITE).
62. Alberto M. Figueroa-Medina, Transportation Safety Council, Institute of Transportation Engineers (ITE).
63. Alberto M. Figueroa-Medina, Executive Committee of the National Institute for Congestion Reduction (NICR), University Transportation Center (UTC). Nov. 2019 -
Present.

64. Alberto M. Figueroa-Medina, Technical Committee of the Pan American Federation of Engineers Societies (UPADI), 2020-Present.
65. Dr. Chris Schwarz: TRB committee on vehicle automation
66. Dr. Chris Schwarz: SAE On Road Automated Driving Simulation Task Force
67. Michelle Reyes: UI Injury Prevention Research Center Executive Committee
68. Michelle Reyes: UI Great Plains Center for Agricultural Health Internal Advisory Committee
69. Michelle Reyes: Transportation Research Board of the National Academies: Standing Committee on Vehicle User Education, Training, and Licensing; and Young Driver Subcommittee, Member
70. Michelle Reyes: Engineering Staff Advisory Council
71. Jacob Heiden: Engineering Staff Advisory Council, President
72. Dawn Marshall: Engineering Staff Advisory Council
73. Dawn Marshall: ACH40 Human Factors of Infrastructure Design and Operations
75. Kelvin Santiago: City of Sun Prairie Public Works Committee
76. David A. Noyce: Board of Governors (elected), Vice President 2020-2021, President 2021-2022. Transportation & Development Institute, American Society of Civil Engineers.
78. David A. Noyce: Chair, Associate Dean for Research Search & Screen Committee. College of Engineering, University of Wisconsin-Madison.
79. David A. Noyce: Member, Undergraduate Student Progression Committee. College of Engineering, University of Wisconsin-Madison.
80. David A. Noyce: Member, Dean’s Leadership Council. College of Engineering, University of Wisconsin-Madison.

1.2.6 Journal editing
1. Dr. Mohamed Abdel-Aty: Editor-in-Chief (July 2013 – 2021), Accident Analysis and Prevention, Elsevier.
2. Dr. Mohamed Abdel-Aty: Associate Editor, Transportation Research Interdisciplinary Perspectives (TRIP).
3. Dr. Mohamed Abdel-Aty: Member, Editorial Board, ITS Journal, Taylor & Francis (2003 – ongoing)
5. Dr. Mohamed Abdel-Aty: Member, Editorial Board, Analytic Methods in Accident Research (AMAR), 2019-present.
6. Dr. Mohamed Abdel-Aty: Member, Editorial Board, Transportation Research Part C, 2019-present
8. Yina Wu: Editorial Board member, Accident Analysis and Prevention, Elsevier.
10. Yina Wu: Guest Editor, Sustainability (special issue: Accident Prevention and Risk Management for Safe and Sustainable Transportation)
11. Lishengsa Yue, handling editor (April 2021 – ongoing), Journal of Transportation Research Record
12. Samiul Hasan, Associate Editor, Journal of Big Data Analytics in Transportation
13. Samiul Hasan, Associate Editor, IEEE ITS conference
15. Xun Zhou is co-editing a special issue for “Frontiers in Big Data” on Big Data for Urban Intelligence
16. ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT), Associate Editor (Rector)
17. ACM Transactions on Accessible Computing (TACCESS), Reviewer (Rector)
18. ACM CHI Conference on Human Factors in Computing Systems, Reviewer (Rector)
19. ACM SIGACCESS Conference on Computers and Accessibility, Reviewer (Rector)
20. ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT), Reviewer (Kearney)
21. IEEE Transaction of Intelligent Vehicles, Reviewer (Kearney)
22. Accident Analysis and Prevention, Reviewer (Kearney)
23. Transportation Research Interdisciplinary Perspectives, Reviewer (Kearney)
24. Spatial Cognition and Computation, editorial board (Plumert)
27. Accident Analysis and Prevention (reviewer, Reyes)
28. Anuj K. Pradhan – Accident Analysis and Prevention - Guest Editor
29. Transportation Research Record Handling Editor (Christofa)
30. Editorial Advisory Board of Transportation Research Part C: Emerging Technologies (Christofa)
34. Didier Valdés-Díaz, Editorial Board Member of International Journal of Natural Disasters, Accidents and Civil Infrastructure (RIDNAIC), Scipedia, August 2020 - Present.
36. Benjamín Colucci-Ríos, President Editorial Board of International Journal of Natural Disasters, Accidents and Civil Infrastructure (RIDNAIC), Scipedia, February 2020 - Present.
37. Benjamín Colucci-Ríos, Co-editor “La Columna” Journal of the Institute of Civil Engineers (IIC), College of Engineers and Surveyors of Puerto Rico. 2020 - Present
38. Benjamin Colucci-Ríos, Assistant to the Editor of Dimension Journal, College of Engineers and Surveyors of Puerto Rico (CIAPR), September 2019 - Present.
40. Benjamín Colucci-Ríos, Member, TRB Committee AHB55 Work Zone Traffic Control; 2017-2020
42. Benjamín Colucci-Ríos, Member, TRB Standing Committee on Road User Measurement and Evaluation (ACH50); 2020-2022.
49. David A. Noyce: Journal of Transportation Engineering (ASCE). Associate Editor.

1.2.7 **Leadership positions in professional organizations**
1. M. Zaki: Paper Review Co-chair of the 2022 TRB AED50 AI and Advanced Computing Applications Committee
2. 2022 ACM CHI Conference on Human Factors in Computing Systems, Program Committee (Rector)
3. 2022 ACM SIGACCESS Conference on Computers and Accessibility, Organizing Committee (Rector)
4. Editorial Board, Driving Simulation Conference 2021 (Kearney)
5. ACM Symposium on Applied Perception, Steering/Program Committee 2021 (Kearney)
6. TRB ACP25 Traffic Signal Systems Committee Member and Paper Review Coordinator (Christofa)
7. TRB AME70 Transportation and Public Health Committee Member and Secretary (Christofa)
9. Benjamin Colucci-Ríos, Member, Board of Directors of the Pan-American Academy of Engineering (PAE), 2018 - Present.
10. Benjamín Colucci-Ríos, Member, Board of Trustees of the Society of Engineers of Puerto Rico (SIPR), 2019 - Present.
11. Benjamin Colucci-Ríos, President of the Pan-American Transport Systems Committee,
1.2.8 SAFER-SIM Webinars

<table>
<thead>
<tr>
<th>Webinar</th>
<th>Date</th>
<th>Registrants</th>
<th>Archived Views</th>
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<tr>
<td>Minimum Time to Situational Awareness During Transfer of Control</td>
<td>4/20/2021</td>
<td>30</td>
<td>45</td>
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<td>Under Varying Levels of Task Load</td>
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<tr>
<td>Extended Evaluation of Training Programs to Accelerate Hazard</td>
<td>5/18/2021</td>
<td>26</td>
<td>29</td>
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<td>Anticipation Skills in Novice Teens</td>
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<tr>
<td>Investigating the Effects of Smartphone based P2V Warning using Driving</td>
<td>6/1/2021</td>
<td>15</td>
<td>25</td>
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<td>Simulator Experiments</td>
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<tr>
<td>Quantifying the Impacts of Situational Visual Clutter on Driving</td>
<td>6/22/2021</td>
<td>15</td>
<td>18</td>
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<td>Performance</td>
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<td>V2I Infrastructure Placement and Safety Implications of CAVs in an</td>
<td>6/29/2021</td>
<td>12</td>
<td>30</td>
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<tr>
<td>interconnected Network</td>
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1.2.9 Professional awards

1. M.Zaki awarded the Canadian Society of Civil Engineering 2021 Thomas C. Keefer Medal for earlier research in improving computer vision for traffic applications.
2. Lakshmi Subramanian, University of Iowa Graduate College Summer Research Fellowship, Spring 2021.
3. Wanxin Wang, University of Iowa Graduate College Summer Research Fellowship, Spring 2021.
4. Morgan Parr, University of Iowa Graduate College Summer Research Fellowship, Summer 2021.
5. Ganesh Pai – Link Foundation Fellowship
6. Anuj K. Pradhan – AAAM Elaine Wodzin Award
7. 2021 ADVANCE Faculty Peer Mentor Award [UMass] (Knodler): This annual award recognizes the critically important work faculty members perform in mentoring and supporting the professional development and success of their colleagues.
8. Benjamín Colucci-Ríos, Recognition of the College of Engineers and Surveyors of Puerto Rico (CIAPR)-Mayaguez Chapter, 2021 Engineers Week, for being the first Puertorican and Hispanic-American to be the recipient of the ASCE Wilbur S. Smith Award. May 17, 2021.
9. Benjamín Colucci-Ríos, 2021 ASCE Wilbur S. Smith Award, “… for unending leadership and dedication to action for the improvement of road safety in Puerto Rico and around the world”. International Conference on Transportation & Development (T&DI). June 10, 2021.
11. Benjamin Colucci-Ríos, 2021 ASCE Region 5 Wall of Fame Award “… for the hard work and dedication to the Civil Engineering Profession throughout your career”. American Society of Civil Engineers (ASCE). September 9, 2021.

1.3 Education and Workforce Development Accomplishments

1.3.1 Peer-reviewed journal publications w/ student authors

1. Guo, Z., Afifah, F.*, Qi, J, and Baghali, S., A Stochastic Multi-Agent Optimization


1.3.2 Book chapters w/ student authors
Nothing to report

1.3.3 Conference posters and papers w/ student authors


1.3.4 Paper/poster awards w/ student authors

Nothing to report

1.3.5 Graduate students working on and supported by SAFER-SIM related projects

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<tr>
<th>Site</th>
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<tr>
<td>University of Iowa</td>
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<tr>
<td>University of Wisconsin Madison</td>
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<tr>
<td>University of Massachusetts Amherst</td>
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<tr>
<td>University of Central Florida</td>
<td>10</td>
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<tr>
<td>University of Puerto Rico Mayaguez</td>
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1.3.6 Undergraduate students working on and supported by SAFER-SIM related projects

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<td>University of Iowa</td>
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<td>University of Wisconsin Madison</td>
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<tr>
<td>University of Massachusetts Amherst</td>
<td>4</td>
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<tr>
<td>University of Central Florida</td>
<td>2</td>
</tr>
<tr>
<td>University of Puerto Rico Mayaguez</td>
<td>3</td>
</tr>
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</table>

1.3.7 Student attendance and presentations at the SAFER-SIM symposium

Nothing to report

1.3.8 Transportation-related M.A. and PhD theses

1. Ma'en Al-Omari (Spring 2021), Crash Analysis And Development Of Safety Performance Functions For Florida Roads in the Framework of the Context Classification System. (Master Thesis)
7. Pranaykumar Kasarla, MS Dissertation, Title “EVALUATION AND COMPARISON OF PARAMETRIC AND NON-PARAMETRIC METHODS FOR DRIVING BEHAVIOR ANALYSIS”
8. Fangda Zhang successfully defended his PhD dissertation on June 11. This SaferSim project and Fangda’s dissertation use similar analytical techniques.
10. Investigating the Safety Impacts of Left-Turn Infrastructure on the Vulnerable Driving Population [PhD Dissertation, Francis Tainter; supervised by M. Knodler]
11. Abigail Helm successfully defended her PhD. This SaferSim project was used for her PhD dissertation.
12. Fred Song, “Traffic Crash Patterns and Causations based on Sequence of Events: Preparing for a Transition into Safe Automated Transportation”

1.3.9 Curriculum modules developed

1. UM - Several modules related to bicycle and pedestrian transportation as part of the new Pedestrians and Bicyclists undergraduate/graduate course (Christofa)
1.3.10 **Student internships related to SAFER-SIM**

1. NSF Research Experience for Undergraduates summer fellowship student supported to work in the Hank Lab.
2. Workplace Learning Connection internship team of high school students spent 8 weeks this summer working with gaze coordinate data from our study to visualize data and identify glances
3. 12 high school interned at NADS through Workplace Learning Connection
4. Volpe National Transportation Systems Center, Transportation Human Factors (Leila Cesic)

1.3.11 **Presentations to student groups or classes**

1. Emily Shull presented a 3-minute thesis to a graduate seminar class. The presentation related to the current SaferSim project as well as a past SaferSim project.
2. Shannon Roberts presented her perspective on incorporating diversity, equity, and inclusion into research to 15 high school students in the Massenberg Summer Institute on July 12, 2021.

1.3.12 **# Schools visited and # students present**

Nothing to report

1.3.13 **# Career fairs visited and # of attendees**

Nothing to report

1.3.14 **Summer institutes and programs and # of students participating**

1. Perry Research Scholars Institute through Belin-Blank summer program (16), 7/14/2021
2. Iowa National Summer Transportation Institute Zoom presentation (15), 6/24/2021

1.4 **Technology Transfer**

1.4.1 **SAFER-SIM webinars**

8 webinars

1.4.2 **Registrations for webinars**

303 registrations
1.4.3 Views of archived webinar content
267 views

1.4.4 Press releases for SAFER-SIM related research
Nothing to report

1.4.5 Media requests

<table>
<thead>
<tr>
<th>Title</th>
<th>Publisher</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <strong>Expert says driver distraction is becoming more dangerous in Iowa</strong></td>
<td>KWWL</td>
</tr>
<tr>
<td>2. <strong>Iowa State Patrol focus on bad driving habits with enforcement project, say distracted driving plays a role</strong></td>
<td>KCRG</td>
</tr>
<tr>
<td>3. <strong>Preventing child pedestrian injuries: Q &amp; A with Dr. Elizabeth O’Neal</strong></td>
<td>UI IPRC</td>
</tr>
<tr>
<td>4. <strong>Elizabeth O’Neal wins K99 Award from NICHD to Study Teen Safety</strong></td>
<td>UI CLAS</td>
</tr>
<tr>
<td>5. <strong>Ganesh Pai Mangalore Wins Prestigious Link Foundation Fellowship</strong></td>
<td>UMass COE</td>
</tr>
<tr>
<td>6. <strong>Best &amp; Worst States for Teen Drivers</strong></td>
<td>WalletHub</td>
</tr>
<tr>
<td>7. <strong>Study: Marijuana’s Impact on Driving Is Strain-Specific</strong></td>
<td>Forbes</td>
</tr>
<tr>
<td>8. <strong>Smart Driving Cars Podcast</strong></td>
<td>Smart Driving Cars Podcast</td>
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</table>

1.4.6 Tours of facilities
2. Trail Trekkers – August 5, 2021
3. Iowa Lt. Governor – August 6, 2021
4. Iowa State Legislators – September 22, 2021

1.4.7 Website traffic

<table>
<thead>
<tr>
<th>Metric</th>
<th>This Period</th>
<th>Lifetime</th>
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<tbody>
<tr>
<td>Total Users</td>
<td>2,090</td>
<td>22,387</td>
</tr>
<tr>
<td>New Users</td>
<td>2,051</td>
<td>21,875</td>
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<tr>
<td>Sessions</td>
<td>3,371</td>
<td>42,737</td>
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<tr>
<td>Page Views</td>
<td>7,426</td>
<td>90,468</td>
</tr>
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1.4.8 Patents filed
Nothing to report
1.4.9 DOT requests for presentations or proposals related to SAFER-SIM
Nothing to report

1.4.10 Practitioner attendance at events
1. Central Northeast Florida ITE Webinar. UCF. August 18, 2021
   Title: Assessing the Safety Impacts of Evacuation Traffic: A Case Study of Hurricane Irma. Number of attendees: 35
   (mostly from transportation professionals from Central Florida region)
3. 46 practitioners at SAFER-SIM webinars
4. 100 attendees at the 11th International Driving Symposium on Human Factors in Driver Assessment, Training, and Vehicle Design

1.4.11 Number of improved or new simulation technologies, software, methods, or processes
Nothing to report

1.5 Collaboration
1.5.1 Attendance at the SAFER-SIMposium
Nothing to report

1.5.2 Interdisciplinary research projects within and across sites
1. Using Simulation to Assess and Reduce Conflicts between Drivers and Bicyclists (Computer Science/Psychological & Brain Sciences)
2. Multi-modal Distributed Simulation Combining Cars, Bicyclists, and Pedestrians (Computer Science/Psychological & Brain Sciences)
3. Using Simulation to Study Communication between Autonomous Vehicles and Vulnerable Road Users (Computer Science/Psychological & Brain Sciences)
4. Understanding Bicyclists’ Behaviors Through Learning from Big Trip Data (Business/Public Health/Urban & Regional Planning)
6. Attention and Adaption of Teen Drivers to Driving Automated Systems – (UMass College of Engineering/College of Natural Sciences)
1.5.3 Collaborative research projects across SAFER-SIM or other UTC sites

1. Multi-modal Distributed Simulation Combining Cars, Bicyclists, and Pedestrians (UI/UW/UM)
2. Using Simulation to Assess and Reduce Conflicts between Drivers and Bicyclists (UI/UW/UM)
3. Enhancing School Zone and School Bus Safety (UCF/UPR)
4. Evaluation of Safety Enhancements in School Zones with Familiar and Unfamiliar Drivers (UPR/UM)
5. The Impact of Driver’s Mental Models of Advanced Vehicle Technologies on Safety and Performance (UI/UM)
6. Analyzing the Performance of Remote-Drivers on Transit Shuttle Short Routes (UW/UPR)
7. Interfacing Synchrono and NADS for Virtual Simulation of Conventional & Connected and Autonomous Vehicles (UW/UCF)
8. AAAFTS/SaferSim Cooperative Research Program (UI/UM/UW/UCF)

1.5.4 Collaborations with industry partners and government agencies

<table>
<thead>
<tr>
<th>Organization Name</th>
<th>Location</th>
<th>Contribution</th>
</tr>
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<tbody>
<tr>
<td>1. Aisin Technical Center of America</td>
<td>Northville, MI</td>
<td>Financial support</td>
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<tr>
<td>2. AAA Foundation for Traffic Safety</td>
<td>Washington D.C.</td>
<td>Financial support, Collaborative research</td>
</tr>
<tr>
<td>3. InSight Learning Technologies</td>
<td>Pacific Palisades, CA</td>
<td>Personnel exchange</td>
</tr>
<tr>
<td>4. Mandli Communications Inc.</td>
<td>Madison, WI</td>
<td>In-kind support, Facilities, Collaborative Research</td>
</tr>
<tr>
<td>5. Continental Mapping Consultants Inc</td>
<td>Madison, WI</td>
<td>In-kind support, Facilities, Collaborative Research</td>
</tr>
<tr>
<td>6. Council of University Transportation Centers</td>
<td>Washington D.C</td>
<td>Financial support</td>
</tr>
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<td>7. Hyundai America Technical Center Inc.</td>
<td>Superior Township, MI</td>
<td>Financial support</td>
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<tr>
<td>8. City of Orlando</td>
<td>Orlando, FL</td>
<td>Collaborative Research</td>
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<tr>
<td>9. Recreational Association of Sport Buenaventura</td>
<td>Mayaguez, PR</td>
<td>Facilities</td>
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<tr>
<td>11. Club de Oficinistas de Mayaguez</td>
<td>Mayaguez, PR</td>
<td>Facilities</td>
</tr>
<tr>
<td>12. Puerto Rico LTAP Center, University of Puerto Rico at Mayaguez</td>
<td>Mayaguez, PR</td>
<td>Facilities</td>
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<td>13. VHB</td>
<td>Washington D.C.</td>
<td>In-kind support</td>
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<tr>
<td>14. Lee Engineering</td>
<td>Phoenix, AZ</td>
<td>In-kind support</td>
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<tr>
<td>15. UW-Madison Global Health Institute</td>
<td>Madison, WI</td>
<td>Collaborative Research</td>
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<td>16. City of Racine</td>
<td>Racine, WI</td>
<td>Financial support</td>
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<td>New this period</td>
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<tr>
<td>17. Gateway Technical College</td>
<td>Racine, WI</td>
<td>In-kind support</td>
</tr>
<tr>
<td>New this period</td>
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</table>

**1.5.5 Collaborative peer-reviewed journal publications**
Nothing to report

**1.5.6 Collaborative book chapters**
Nothing to report

**1.5.7 Student exchanges with other SAFER-SIM sites**
Nothing to report

**1.5.8 Students pursuing advanced degrees at other SAFER-SIM sites**
Nothing to report

**1.5.9 Programs involving community colleges**
1. University of Wisconsin Shuttle Project involving Gateway Technical College

**1.5.10 Graduates hired at SAFER-SIM, other UTC sites, or external organizations**
1. Francis Tainter – Post-Doctoral Researcher – University of Massachusetts - Amherst
2. Fred Song, PhD. Graduated. Placed at University of Connecticut as a Post-Doctoral Researcher

**1.6 Diversity**

**1.6.1 SAFER-SIM projects involving underrepresented/minority (U/M) students**
22 projects involving 23 students

**1.6.2 U/M events attended**
1. Shannon Roberts sat on a panel for the Massenberg Summer Institute, which is for underrepresented high school students, on July 30, 2021. There were approximately 15 students in attendance in addition to 5 other faculty of color.
2. Iowa National Transportation Summer Institute in July 2021 at UI – 15 students
1.6.3 #U/M students at attended events
30 students

1.6.4 Graduating U/M student placement
1. Alyssa Ryan, Assistant Professor at Arizona State University
2. Yalda Ebadi, Jaguar Land Rover North America

1.7 Outcomes
1.7.1 Number of improved or new technologies, software, methods, or processes adopted
1. A simulation platform for pedestrian behavior and interaction in shared spaces was improved from this SAFER-SIM project. The simulation considers the microscopic behavior through the modeling of the gait parameters, group behavior and obstacle avoidance. A stable connectivity network in MANET comprising of active mobile traffic agents and their walking behavior. The network will be used for data dissemination for safety events
2. A novel method to capture the interactions among different DPMs so that the prediction performance was improved from this SAFER-SIM study. The method was validated in NADS-1 and mini-SIM under various driving conditions, and the results demonstrated that 15%-20% improvement of DPM prediction accuracy can be achieved.

1.7.2 Stakeholders who adopt, implement or deploy SAFER-SIM research findings or technologies through policy, practice, regulation, rulemaking or legislation
Nothing to report

1.7.3 Number of projects that reach adoption, implementation or deployment
Nothing to report

1.8 Impacts
1.8.1 Expected reductions in crashes from implemented policy, practice, regulation, rulemaking, or legislation
1. The developed simulation this SAFER-SIM project will provide a means to understand the behavior of pedestrians under mixed traffic conditions. The developed framework aids in investigating urban mobility and peer to peer communication scenarios which will foster next generations shared transportation systems. A robust communication network will share information reliably to all the participating nodes in a network and therefore can be used to address challenging times of disaster evacuation, emergency evacuation.
Better communication will help to maintain the safety of non-motorized traffic agents and micro-mobility agents against motorized traffic in shared space.

2. By supporting the safety evaluation of automated vehicles, this SAFER-SIM research can hasten the development and deployment of AVs and turn the widely expected societal benefits of AV into reality.

3. The results of this SAFER-SIM study indicate that drivers’ visual environment could have significant impacts on traffic safety. The findings could provide a cost-effective method to evaluate road safety and identify important features to reduce crash occurrence and severity if implemented.

1.8.2 Expected reduction in congestion and traffic conflicts from implemented policy, practice, regulation, rulemaking or legislation

1. The direct impact of this SAFER-SIM project is to provide an accurate prediction of the Driving Performance Measures (DPMs) under unobserved driving conditions, which can reduce simulation costs and time. The long-term impact of the project is to reveal the interaction mechanism among different DPMs, which can provide guidance for the DPM design and collection process. A 30%-40% deduction of simulation costs and time can be expected by using the proposed DPM prediction method. The thorough understanding of the DPM interactions can contribute to accurate control and feedback of autonomous driving.