



## 6.2 Itemized Project Titles &amp; Funding Source

1. Wu, S. (PI), Kang, M.-W. (co-PI), and Cleary, J. (co-PI), "Review and Evaluation of Concrete Pavement Design Method in Alabama," Alabama Department of Transportation, \$200,943, May 2024 – Dec. 2025.
2. Wu, S. (PI), Kang, M.-W. (co-PI), Cleary, J. (co-PI), Lisa LaCross (co-PI), "Integrating Standard Education in Civil Engineering Materials Curriculum", Sponsored by National Institute of Standards and Technology (NIST), \$144,528. Oct. 2023 – Oct. 2026.
3. Wu, S. (PI), Venkiteswaran, K. (co-PI), Wang, J. (co-PI), Stenson, A. (co-PI), Kang, M.-W. (co-PI), Cleary, J. (co-PI), and Dizbay-Onat, M. (co-PI), "Gulf Coast - Center for Addressing Microplastics Pollution (GC-CAMP): Understanding, Mitigation and Prevention of Waste Plastic Marine Debris in the Gulf Coast", Sponsored by National Oceanic and Atmospheric Administration (NOAA) and Mississippi State University, \$1,000,000. Oct. 2023 – Oct. 2026.

11. Kang, M.-W. (Mentor), Caldwell, T., " *Assessing USA Campus Parking Management*," Sponsored by UCUR - University of South Alabama, \$2,000. April 2014 - June 2014.
12. Kang, M.-W. (Mentor), Noland, T., " *Assessing Traffic Delay and Pedestrian Safety Risk of USA Main Campus*," Sponsored by UCUR.



- for Rail Infrastructure Planning and Design: Case Study of St Andrews, Scotland, *Journal of Transportation Engineering* – ASCE, Vol. 140, No. 1, pp. 1-11. [https://doi.org/10.1061/\(ASCE\)TE.1943-5436.0000445](https://doi.org/10.1061/(ASCE)TE.1943-5436.0000445)
18. Mishra<sup>‡</sup>, S., Kang, M.-W., and Jha, M.K. (2014). An Empirical Model with Environmental Considerations in Highway Alignment Optimization, *Journal of Infrastructure Systems*, Vol. 20, No. 4, pp. 1-12. [https://doi.org/10.1061/\(ASCE\)IS.1943-555X.0000194](https://doi.org/10.1061/(ASCE)IS.1943-555X.0000194)
  19. Kang<sup>‡</sup>, M.-W. Shariat<sup>\*</sup>, S., and Jha, M.K. (2013), New Highway Geometric Design Methods for Minimizing Vehicular Fuel Consumption and Improving Safety, *Transportation Research Part C – Emerging Technology*, Vol. 31, June 2013, pp. 99-111. <https://doi.org/10.1016/j.trc.2013.03.002>
  20. Kang<sup>‡</sup>, M.-

2. Biswas\*, P., Kang‡, M.-W. and Rahman\*, M. (under review). Field Assessment of Variable Left-Turn Mode by Time-of-Day for Intersections being Upgraded with FYA Signal Heads and Offset Left-Turn Lanes, *Transportation Research Record: Journal of Transportation Research Board*.

### 7.3 Book & Referred Book Chapters (5 ) (graduate student\*; corresponding author‡)

1. “Artificial Intelligence in Highway Location and Alignment Optimization” Kang M.-W. and Schonfeld, P. (University of Maryland, College Park) <https://doi.org/10.1142/11059> Sep.2020 | Total Pages: 288 | Published [World Scientific Publishing](#)
2. Corliss\*, D. and Kang‡, M.-W. (2013), Roundabout Feasibility for Improving a University Campus Intersection, Using Microscopic Traffic Simulation Approaches, In *Recent Research in Urban Sustainability, Architecture and Structures*, O. Owolabi and M. Jha (ed.), ISBN: 978-960-474-331-5, pp. 58-65, WSEAS Press.
3. Jha‡, M.K., Djiki, B., Kang, M.-W., and Kim, E. (2013), Cost-Benefit Analysis in Applying Design Flexibility and Context Sensitive Solutions: A Case Study of Alternative Alignment of MD 43 Extension, in *Highways: Construction, Management, and Maintenance*, Samantha R. Jones (ed.), ISBN: 978-1-61728-862-3, pp. 133-147, Nova Science Publishers, Inc.
4. Kang‡, M.-W., Jha, M.K. and Karri, G. (2010) Determination of Robot Drop Locations for Military Path Planning Using GIS Application, In *Recent Advances in Computer Engineering and Applications*, S. Lagakos, L. Perlovsky, M. Jha, B. Covaci, A. Zaharim, N. Mastorakis (eds.), ISBN: 978-960-474-151-9, pp. 194-200, WSEAS Press.
5. Jha, M.K., Karri‡, G., and Kang, M.-3 Tw -4.964 -1.8r3.1511 4 -7 , 3 T - w

8. Buddharaju\*, R., Jha

*Approaches*, USA UCUR Summer Undergraduate Research Program. Mobile, AL.

7. Kang, M.-W., Jha, M.K. and Schonfeld, P. *Alternative Alignments Development and Evaluation for the US 220 Project in Maryland*. Final Report for Maryland State Highway Administration, MD-11-SP009B49, Maryland Department of Transportation, June 2011.
8. Kang, M.-W., Jha, M.K., and Hwang, D., *A GIS-Based Simulation Model for Positioning & Routing Unmanned Ground Vehicles*, Part I – Phase II Final Report of Software-Simulated Test and Evaluation of Military Missions Using Positioning and Routing Algorithms, Submitted to Test & Evaluation/Scii8.vG3 (g P)-9i



Annual Meeting of Transportation Research Board of National Academies of Sciences, Washington DC, January 2024. [poster]

2. Biswas\*, P., Kang<sup>‡</sup>, M.-W., Hossain\*, M.D., Rahman\*, M., Evaluation of Field Implementation of FYA Variable Left-Turn Traffic Operation by Time-of-Day at Signalized Intersections on Multilane Divided Highways in Alabama. 103rd Annual Meeting of Transportation Research Board of

- Sensor using Low-Cost LiDAR and Continuous Wavelet Transform. *98th Annual Meeting of Transportation Research Board of National Academies of Sciences*, Washington DC, 2019. [platform].
16. Momtaz\*, S. and Kang‡, M.-W. Auditory Warning Signals: Improving Driver Compliance to Roadside Safety Signs, 2017 Road Safety & Simulation Conference (RSS2017), Hague, NL, Oct. 17 – 19, 2017. [platform]
  17. Kang‡, M. W. Drowsy Driving Advisory Systems: Educating Road Users and Preventing Drowsy Driving Crashes, *KSEA (Korean-American Scientists and Engineers Association)*, University of Virginia, Charlottesville, VA. February 17, 2017. [Skype Presentation]
  18. Kang‡, M. W. Drowsy Driving Advisory Systems in Alabama, *60th Alabama Annual Transportation Conference*, Montgomery, Alabama. February 9, 2017. [platform]
  19. Kang‡, M.-W. and Schonfeld, P. Analysis of Seasonal Variation of Upper Mississippi River Towboat Traffic, *96th Annual Meeting of Transportation Research Board of National Academies of Sciences*, Washington DC, January 2017. [platform]
  20. Kang‡, M.-W. Dilemma Zone Protection (DZP) Systems: Dilemma Zone Protection (DZP) Systems: Characterizing Driver Behavior and Optimizing DZP Boundaries, *Research Meetings with ALDOT Design and Maintenance Bureaus and Research Advisory Committee (RAC)*, Montgomery, AL, April 2016; July 2016. [platform]
  21. Kang‡, M.-W. Crash Analysis and Public Survey for Drowsy Driving Advisory System Development, *Joint Alabama Section Institute of Transportation Engineers (ALSITE)-DSITE 2015 Annual Meeting*, Gulf Shores, AL, June 3-5, 2015
  22. Kang‡, M.-W., Momtaz\*, S., Caldwell, T., Ellzey, J. Crash Analysis and Public Survey for Drowsy Driving Advisory Systems, USA – 22nd Annual Graduate Research Forum, The Graduate School of University of South Alabama, Mobile, AL, March 16, 2015. [poster]
  23. Momtaz\*, S., Kang‡, M.-W., Caldwell, T., Ellzey, J. Effectiveness of Audible Pavement Treatments on Drivers' Compliance to Roadside Safety Signs - A Driving Simulator Study, USA – 22nd Annual Graduate Research Forum, The Graduate School of University of South Alabama, Mobile, AL, March 16, 2015. [poster]
  24. Kang‡, M.-W., M. Assessing Safety and Operational Aspects of Interstate Highway Guide Signs, Research Meeting with ALDOT Maintenance Bureau, Alabama Department of Transportation (ALDOT), Montgomery, AL, February 2, 2015. [platform]
  25. Lamondia‡, J. and Kang, M.-W., M. Safety Improvement Program: Using the Surrogate Safety Assessment Model (SSAM) to Identify Impacts of Traffic-Promoting Roadway Characteristics on Crash Occurrence, *Research Meeting with ALDOT Maintenance Bureau*, Montgomery, AL, Oct. 2014. [platform]
  26. Mishra‡, S., Kang, M.-W., and Jha, M.K. "A Tri-Level Model with Environmental Considerations in Highway Alignment Optimization," *93th Annual Meeting of Transportation Research Board of the National Academies of Sciences*, Washington DC, January 2014. [poster]
  27. Jha‡

30. Kang<sup>‡</sup>, M.-W. Introducing Transportation Engineering Research at University of South Alabama. *ALDOT / ADEM Meeting*. Mobile, AL, January 2013. [platform]
- 31.

- Dynamic GIS." *4th WSEAS International Conference on Computer Engineering and Applications (CEA '10)*, Harvard University, Cambridge, Jan. 2010. [platform]
47. Kang ‡, M.-W., Yang, N., Schonfeld, P., and Jha, M.K. "Bi-Level Highway Route Optimization." *89th Annual Meeting of Transportation Research Board of National Academies of Sciences*, January 2010, Washington DC. [platform] [poster]
  48. Yang ‡, N., Kang, M.-W., Schonfeld, P., and Jha, M.K. "Multiple Objective Optimization of Highway Alignments Incorporating Preference Information." *89th Annual Meeting of Transportation Research Board of National Academies of Sciences*, January 2010, Washington DC. [platform]
  49. Kang ‡, M.-W. (invited) Multi-objective Bi-Level Highway Alignment Optimization, *Invited talk at the Korea Transportation Institute*. Seoul, Korea. March 2009. [platform]
  50. Burnier, C., Clifton ‡, K.J., Huang, S., Kang, M.-W., and Schneider, R. "A Meso-Scale Model of Pedestrian Demand." *ACSP-AESOP 4th Joint Congress*, in Chicago, Illinois, 2008 [platform]
  51. Schonfeld, P., Kang, M.-W, and Jha, M.K. "Optimizing Highway Alignments with Genetic Algorithms and GIS." *Research Meeting with Pennsylvania Department of Transportation*, Harrisburg PA, November, 2008. [platform]
  52. Schonfeld, P., Kang, M.-W, and Jha, M.K. "Highway Alignment Optimization with Genetic Algorithms and GIS." *Research Meeting with Virginia Department of Transportation*, Richmond VA, October, 2008. [platform]
  53. Karri, G., Jha, M.K., Kang, M.-W., and Schonfeld, P. "Application of GIS in Highway Alignment Optimization." *TUgis07: 20th Annual Geographic Information Science Conference*, Towson, MD, March 2007. [platform]
  54. Schonfeld, P., Kang, M.-W, and Jha, M.K. "Improved Alignment Evaluation and Optimization Model," *Intermediate Research Meeting with Maryland State Highway Administration*, Baltimore MD, June, 2006. [platform]
  55. Schonfeld, P., Kang, M.-W, and Jha, M.K. "Improved Alignment Evaluation and Optimization Model," *Interim Research Meeting with Maryland State Highway Administration*, Baltimore MD, March, 2006. [platform]
  56. Kang, M.-W., Jha, M.K., and Soror ee(d,-)1.1 ( P)2.a.e iorw (ov)-20 (ed )-11.8 (A)2.4 nt33.1 (gn)-12.2 3 (eO2 (K)2

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|---|--------------------------------------------------------------------------------------------------------------|-------------------------|
| x | ASCE – Transportation & Development Institute                                                                | Member (National)       |
| x | ASCE T&DI – Street & Highway Operations Committee                                                            | Member (National)       |
| x | ASCE T&DI – Artificial Intelligence (AI) in Transportation Committee                                         | Member (National)       |
| x | ASCE-T&DI – Transportation Safety Committee                                                                  | Member (National)       |
| x | Transportation Research Board (TRB), a Division of National Academies of Sciences, Engineering, and Medicine | Aff Mem (International) |
| x | TRB Artificial Intelligence & Advanced Comp Application (TRB-AED50)                                          | Friend (International)  |
| x | TRB – AED50's Paper Review                                                                                   |                         |

- x *Journal of Transportation Research Board (TRB) – National Academies* 2009–Pre

#### 8.4 Professional Development Activities

- x ASCE Workshop on Artificial Intelligence for Connected Community & Transport. Cyber-Physical Systems Nov. 2021
- x Alabama Road Safety Conference 2018-Pre
- x ALSITE – DSITE Annual Workshop, Gulf Shores, AL 2015–Pre
- x Annual Alabama Transportation Conference, Montgomery, AL 2012–Pre
- x ASCE Alabama – Mobile Branch Meetings, Mobile, AL 2012–Pre
- x USA ILC workshops, Mobile, AL 2012–Pre
- x Transportation Research Board (TRB) Annual Meetings, Washington D.C. 2003–Pre
- x ASCE ExCEED Workshop 2018
- x USA ILC – 2017 Conference on Teaching and Learning (CoTL), Mobile, AL May 2017
- x Railway Engineering Education Symposium (REES 2016) by AREMA at UIUC, IL July 2016
- x USA ILC – Summer Academy (a three-day workshop), Mobile, AL July 2015
- x NSF CAREER Proposal Workshop - CMMI Division Focus, Univ. of Maryland, MD April 2014
- x USA UCUR Program at University of South Alabama. 2014; 2013
- x RESTORE Act Mixer, Mobile, AL 2013; 2012
- x GRITS 2013 Fall Workshop at USA, Mobile, AL Nov. 2013
- x ASCE Alabama 2013 Wither Meeting, AL Mar. 2013
- x Half-Day Faculty Research Orientation at USA, Mobile, AL Nov. 2012
- x Made presentations to discuss engineering approaches to improve traffic operation & safety of Airport Blvd, City of Mobile - Traffic Eng. Division, Mobile, AL Sept. 2012
- x NSF – Transportation Engineering Educators Workshop, Seattle, WA July 2012
- x USA – Grants in Focus Meeting at USA, Mobile, AL Feb. 2012

#### 8.5 Invited Speakers

- x Invited speaker at the 65<sup>th</sup> Alabama Transportation Conference, Montgomery, AL Feb 2022
- x Invited speaker at the 60<sup>th</sup> Alabama Transportation Conference, Montgomery, AL Feb 2017
- x Invited speaker for Korean-American Scientists and Engineers Association (KSEA)'s Central Virginal Chapter Seminar Series, Skype Presentation Feb 2017
- x Invited speaker at ALSITE 2015 Summer Meeting, Gulf Shores, AL June 2015
- x Invited speaker at ASCE Mobile Branch Meeting, Mobile, AL May 2012
- x Invited speaker at Univ. of Virginia – Civil Engineering Graduate Seminar Series Apr. 2011
- x Invited speaker at the Korea Transportation Institute (KOTI) Mar 2009

#### 8.6 Workshops & Conferences Organized

- x Workshop Organizer, FHWA – ALDOT Road Safety Workforce Capacity Development Peer Exchange, Mobile, Alabama. (September 19, 2016 - September 21, 2016).
- x Session Chair of 2nd International Conference on Sustainable Cities, Urban Sustainability and Transportation (SCUST '13); Maryland, September 17-19, 2013
- x Conference Organization Committee; World Scientific and Engineering Academy and Society Series of International Conferences; Morgan State University, Nov. 7-9, 2009.

### 9. Student Guidance

#### 9.1 Ph.D. Dissertation Committee

1. MD Rezwan Hossain (Chair), “TBD” Systems Engineering (Transportation Engineering Focus), August 2022 – present.

2. Pranesh Biswas (Chair), "*Variable Left-Turn Traffic Management System for Signalized Intersections on Multilane Divided Highways*" Systems Engineering (Transportation Engineering Focus), January 2020 – present.
3. MD Moynur Rahman (Chair), "*Development of Dynamic Dilemma Zone Protection System: Characterizing Driver Behaviors at High-Speed Signalized Intersection Using Machine Learning and Continuous Vehicle Tracking*," Systems Engineering (Transportation Engineering Focus), January 2019 – July 2022).
4. Francis Udentia at Morgan State University (Committee Member), "Strategies to Improve the Efficiency of a Multimodal Interdependent Transportation System in Disaster," Civil Engineering (Transportation Engineering Focus), 2009 – December 2013.
5. Rene Lord-Attivor at Morgan State University (Committee Member), "Modeling Gap Acceptance and Driver Behavior at Stopped Controlled Intersections (Prifersed Intde Ju.mber

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- x CE 590: SpTp: Advanced Traffic Engineering – Traffic Operations at Signalized Intersections Fall 2020-Pre
- x CE 590: SpTp: Advanced Highway Safety Spring 2012 & Fall 2013
- x CE 592: Machine-Learning Application for Driver Behavior Prediction at High-Speed Signalized Intersections

- x Judge and Session Chair, Mobile Science & Engineering Fair (2014 - Present)
- x Director of Education, International Baptist Church of Mobile (2014 – July 2021)
- x Participant, College of Engineering 3D Printing for COVID-19 Supply Need, University of South Alabama (April – May 2020)