

Daiheng Ni, Ph.D.

Associate Professor

Department of Civil and Environmental Engineering
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I. Earned Degrees

Ph.D. (2004) Georgia Institute of Technology
Major: Civil Engineering / Transportation
Minor: Operations Research

MSIE. (2003) Georgia Institute of Technology
M.Sc. in Industrial and Systems Engineering

M.Sc. (2001) Georgia Institute of Technology
M.Sc. of Civil Engineering

II. Employment

Associate Professor: 2011 – Present
Department of Civil and Environmental Engineering
University of Massachusetts Amherst

Assistant Professor: 2005 – 2011
Department of Civil and Environmental Engineering
University of Massachusetts Amherst

III. Teaching

A. Courses Taught

1. CEE310 Introduction to Transportation Engineering
2. CEE 411/511 Traffic Engineering
3. CEE 520 Traffic Flow Theory and Simulation I
4. CEE521 Traffic Flow Theory and Simulation II

5. CEE590I Signalized Intersections and Systems

B. Students Advised

B1. Ph.D. Students (Funded and as Committee Chair)

Samuel Oppong, Spring 2018 – Present

Tao Jiang, Spring 2015 – Present

Dissertation Topic: The Modeling of Drivers' Lane Change and Gap Acceptance Behaviors.

Chaoqun (Enzo) Jia, CEE2015 PhD

Dissertation: Modeling Interactions Between Human Factors and Traffic Flow Characteristic

Data Analyst, Massachusetts Mutual Life Insurance Company

Andrew L. Berthaume, CEE 2014 PhD

Dissertation: Microscopic Modeling of Driver Behavior Based on Modifying Field Theory for Work Zone Application

Community Planner, Volpe, The National Transportation Systems Center

Haizhong Wang, CEE 2010 Ph.D.

Dissertation: Stochastic Modeling of the Equilibrium Speed-Density Relationship

Assistant Professor, Oregon State University

Jia Li, Transferred out in 2009

B2. Masters Students (Funded and as Committee Chair)

George Copoulos, CEE 2015 MS

John Guzze, CEE 2013, MS

David Champoux , CEE 2013, MS

Qiao Li, CEE 2012, MS

Samuel Oppong, CEE 2012, MS

Gabriel Leiner, CEE 2012, MS

Gilbert Telin Kim, CEE 2011, MS.

Cheng Zhang. CEE 2011 MS.

Mariya A. Maslova, CEE 2010 (Co-Advised with Dr. Collura) MS.

Steven Andrews, CEE 2009, MS.

Adam Bailin

Loren Barcus

Dwayne Henclewood, CEE 2007 MS.

LEOW, Woei Ling, ECE 2007 (Co-advised with Dr. Pishro-Nik) MS.

B3. Research Assistants (Funded and as Faculty Advisor)

Jared Geller, CEE Honors student, 2015-2016
Anthony Battista, CEE Honors student, 2015-2017
Steven Tupper, CEE 2007
Kevin D. Moriarty, CEE 2007
Kimberly Rudy, NSF REU student, 2007
Matthew Kindzerske, Math 2007

B5. Senior Design Projects (As Faculty Advisor)

SDP Team 2017-2018: Application of sUAS in Traffic Data Collection
Matthew Shin, Alexander Duniak, Cyril Caparanga, Christopher Barbeau
Co-Advised with Prof. Hossein Pishro-Nik (ECE)

SDP Team 2016-2017: ASPECTS - Airport Secure Perimeter Control System
Christopher Boselli, Sandra McQueen, Jason Danis, Alex Breger
Co-Advised with Prof. Douglas Looze (ECE)

SDP Team 2008-2009: Crossroads – Intersection Collision Warning
Christopher Comack, Madison Z Wang, Simon Tang, Joseph L Tochka
Co-Advised with Prof. Hossein Pishro-Nik (ECE)

SDP Team 2007-2008: Vehicular Ad-Hoc Network for Collision Warning
Sean Morrell, Daniel Marcq, Jarrod LaBarge, and Anthony Swochak
Co-Advised with Prof. Hossein Pishro-Nik (ECE)

SDP Team 2006-2007: VII-Enabled Intersection Collision Warning System
Richa Prasad, Mohammed Raza Kanjee, Hui Zhu and Thai Nguyen
Co-Advised with Prof. Hossein Pishro-Nik (ECE)

IV. Scholarly Accomplishments

A. Publications in Refereed Journals

Note: Authors with underlines are my graduate students (see III.B.) or advisees.
* Denotes corresponding author

A1. Books and Book Chapters

B02 Daiheng Ni. Traffic Flow Theory, 1st Edition, Elsevier, ISBN: 9780128041345. 2015.

B01 Daiheng Ni. Mathematical Modeling of Connected Vehicles. Book Chapter in Advances in Intelligent Vehicles (Editors Yaobin Chen and Lingxi Li). Elsevier. ISBN: 978-0-12-397199-9. December 2013.

A2. Publications in Refereed Journals

J43 Guotao Xie, Hongmao Qin, Manjiang Hu, Daiheng **Ni**, Jianqiang Wang*. Modeling Discretionary Cut-in Risks Using Naturalistic Driving Data. Accepted for publication by Transportation Research Part F: Psychology and Behaviour.

J42 Jared Geller and Daiheng **Ni***. Operational Organization of Small Unmanned Aerial System Physical Airspace. Accepted for publication by Journal of Unmanned Aerial Systems. 2017.

J41 Chris Boselli, Jason Danis, Sandra McQueen, Alex Breger, Tao Jiang, Douglas Looze, and Daiheng **Ni***. Geo-fencing to Secure Airport Perimeter against sUAS. Accepted for publication by International Journal of Intelligent Unmanned Systems. 2017.

J40 Anthony Battista and Daiheng **Ni***. A Comparison of Traffic Organization Methods for Small Unmanned Aircraft Systems. Accepted for publication by Transportation Research Record, Journal of the Transportation Research Board. 2018.

J39 Daiheng **Ni***, Hui K Hsieh, and Tao Jiang. Modeling Phase Diagrams as Stochastic Processes with Application in Vehicular Traffic Flow. To appear in Applied Mathematical Modelling, Elsevier. 2017.

J38 Anthony Battista and Daiheng **Ni***. Modeling of Small Unmanned Aircraft Systems Traffic Flow Under External Force. Transportation Research Record 2626. DOI: 10.3141/2626-10. 2017.

J37 Daiheng **Ni**, Chaoqun Jia, Likun Wang, Yang Li, Jianqiang Wang*. Modeling the Effect of Connected Vehicles on Traffic Flow. To appear in Journal of Intelligent Transportation Systems: Technology, Planning, and Operations, Taylor & Francis. 2017

J36 Tao Jiang, Jared Geller, Daiheng **Ni***, John Collura. Unmanned Aircraft System Traffic Management: Concept of Operation and System

Architecture. *International Journal of Transportation Science and Technology*, Elsevier B.V. Volume 5, Issue 3, Pages 123-135. 2017.

- J35 Jianqiang Wang*, Jian Wu, Xunjia Zheng, Daiheng Ni, and Keqiang Li. Driving Safety Field Theory Modeling and its Application in Pre-collision Warning System. *Transportation Research Part C: Emerging Technologies*, Elsevier B.V. Volume 72, Pages 306–324. 2016.
- J34 Yangliu Dou, Daiheng Ni, Zhao Wang, Jianqiang Wang*, Fengjun Yan. Strategic Car-Following Gap Model Considering the Effect of Cut-ins from Adjacent Lanes. *IET Intelligent Transport Systems*, Institution of Engineering and Technology. Volume 10, Issue 10, Pages 658-665. DOI: 10.1049/iet-its.2016.0149. 2016.
- J33 Daiheng Ni*, Linbo Li, Haizhong Wang, and Chaoqun Jia. Observations on the Fundamental Diagram and Their Interpretation from the Human Factors Perspective. *Transportmetrica B: Transport Dynamics*, Taylor & Francis. Volume 5, Issue 2, Pages 163-180. Published online 2016.
- J32 Daiheng Ni*, John D. Leonard, Chaoqun Jia, and Jianqiang Wang. Vehicle Longitudinal Control and Traffic Stream Modeling. *Transportation Science*, INFORMS. Volume 50, Issue 3, Pages 1016-1031. Permalink: <http://dx.doi.org/10.1287/trsc.2015.0614>. Published online 2015.
- J31 Enzo C. Jia, Jianqiang Wang, and Daiheng Ni*. An Efficient Methodology for Calibrating Traffic Flow Models Based on Bisection Analysis. *Journal of Applied Mathematics*, Hindawi Publishing Corporation. Volume 2014, Article ID 949723. 2014.
- J30 Jianqiang Wang, Daiheng Ni*, and Keqiang Li. RFID-Based Vehicle Positioning and Its Applications in Connected Vehicles. *Sensors*, MDPI AG. Volume 14, Issue 3, Pages 4225-4238. 2014.
- J29 Daiheng Ni*. A Unified Perspective on Traffic Flow Theory, Part I: The Field Theory. *Applied Mathematical Sciences*, Volume 7, Issue 39, Pages 1929-1946 HIKARI Ltd. 2013.
- J28 Daiheng Ni*. A Unified Perspective on Traffic Flow Theory, Part II: The Unified Diagram. *Applied Mathematical Sciences*, Volume 7, Issue 40, Pages 1947-1963 HIKARI Ltd. 2013.
- J27 Daiheng Ni* and Haizhong Wang. A Unified Perspective on Traffic Flow Theory, Part III: Validation and Benchmarking. *Applied Mathematical Sciences*, Volume 7, Issue 40, Pages 1965-1982 HIKARI Ltd. 2013.

- J26. David Hurwitz*, Haizhong Wang, Michael A. Knodler, Daiheng Ni, and Derek Moore. Fuzzy Sets to Describe Driver Behavior in the Dilemma Zone of High-Speed Signalized Intersections. *Transportation Research Part F: Traffic Psychology and Behaviour*. Volume 15, Issue 2, Pages 132–143. Elsevier. 2012.
- J25. Daiheng Ni*, Jia Li, Steven Andrews, and Haizhong Wang. A Methodology to Estimate Capacity Impact due to Connected Vehicle Technology. *International Journal of Vehicular Technology (IJVT)*, Hindawi Publishing Corporation. Volume 2012, Article ID 502432, DOI:10.1155/2012/502432. 2011.
- J24. Haizhong Wang, Jia Li, Qian-Yong Chen, and Daiheng Ni*. Logistic Modeling of the Equilibrium Speed-Density Relationship. *Transportation Research Part A*. Volume 45, Issue 6, Pages 554-566. Elsevier. 2011.
- J23. Daiheng Ni*. Multiscale Modeling of Traffic Flow. *Mathematica Aeterna*, Hilaris Ltd. Volume1, Issue 01, Pages 27-54, 2011.
- J22. Haizhong Wang, Daiheng Ni*, Qian-Yong Chen, and Jia Li. Stochastic Modeling of Equilibrium Speed-Density Relationship. *Journal of Advanced Transportation*, John Wiley & Sons, Inc. Volume 47, Pages 126-150. DOI: 10.1002/atr.172. 2011.
- J21. Mohammad Nekoui*, Hossein Pishro-Nik, Daiheng Ni. The Effect of IntelliDrive on the Efficiency of Highway Transportation Systems. *International Journal of Vehicular Technology (IJVT)*, Hindawi Publishing Corporation. Volume 2011, Article ID: 653542. DOI:10.1155/2011/653542. 2011.
- J20. Jia Li, Haizhong Wang, Qian-Yong Chen, Daiheng Ni*. Analysis of LWR model with fundamental diagram subject to uncertainties. *Transportmetrica*. Taylor and Francis. Volume 8, Issue 6, Pages 387-405. DOI: 10.1080/18128602.2010.521532. 2011.
- J19. Steven Andrews, Haizhong Wang, Daiheng Ni*, Song Gao, John Collura. Development and Implementation of an Adapted Evacuation Planning Methodology in the Framework of Emergency Management and Disaster Response: A Case Study Using TransCAD. *Journal of Transportation Safety and Security*, Taylor and Francis. Volume 2, Issue 4, Pages 352-368. 2010.
- J18. Jia Li, Haizhong Wang, Qian-Yong Chen, Daiheng Ni*. Traffic Viscosity due to Speed Variation: Modeling and Implications. *Mathematical and Computer Modelling*, Elsevier Science. Volume 52, Issue 9-10, Pages 1626-1633. 2010.

- J17. Haizhong Wang, Kimberly Rudy, Jia Li, Daiheng Ni*. Traffic Flow Breakdown Probability and Link Throughput Optimization. *Applied Mathematical Modeling*, Elsevier Science. Volume 34, Pages 3376–3389. 2010.
- J16. Mohammad Nekoui, Daiheng Ni*, Hossein Pishro-Nik, Richa Prasad, Mohammed Raza Kanjee, Hui Zhu and Thai Nguyen. Development of a VII-Enabled Prototype Intersection Collision Warning System. *International Journal of Internet Protocol Technology (IJIPT)*, Inderscience. Volume 4, Issue 3, Pages 173-181. 2009.
- J15. Dwayne Henclewood and Daiheng Ni*. A Dynamic-Interactive-Vehicle Model for Modeling Traffic beyond the Microscopic Level. *International Journal of Vehicle Information and Communication Systems (IJVICS)*. Inderscience. Volume 2, Issue 1-2, Pages 40-58. 2009.
- J14. Daiheng Ni* and Dwayne Henclewood. Simple Engine Models for VII-Enabled In-Vehicle Applications. *IEEE Transactions on Vehicular Technology*. Volume 57, Issue 5, Pages 2695-2702. 2008.
- J13. Daiheng Ni* and Haizhong Wang. Trajectory Reconstruction for Travel Time Estimation. *Journal of Intelligent Transportation Systems*. Taylor & Francis. Volume 12, Issue 3, Pages 113-125. 2008.
- J12. W. L. Leow, Daiheng Ni*, and Hossein Pishro-Nik. A Sampling Theorem Approach to Traffic Sensor Optimization. *IEEE Transactions on Intelligent Transportation Systems*. Volume 9, Issue 2, Pages 369-374. 2008.
- J11. Matthew D. Kindzerske and Daiheng Ni*. A Composite Nearest Neighbor Nonparametric Regression to Improve Traffic Prediction. *Transportation Research Record* 1993, Pages 30-35. 2007.
- J10. Daiheng Ni*. Determining Traffic Flow Characteristics by Definition for Application in ITS. *IEEE Transactions on Intelligent Transportation Systems*. Volume 8, Issue 2, Pages 181-187, 2007.
- J09. Daiheng Ni*. Challenges and Strategies of Transportation Modeling and Simulation under Extreme Conditions. *International Journal of Emergency Management (IJEM)*. Inderscience. Volume 3, Issue 4, Pages 298-312, 2006.
- J08. Daiheng Ni*, John D. Leonard, and Billy M. Williams. The Network Kinematic Waves Model: A Simplified Approach to Network Traffic. *Journal of Intelligent Transportation Systems: Technology, Planning, and Operations*. Taylor & Francis. Volume 10, Issue 1, Pages 1-14, 2006

- J07. Daiheng Ni* and John D. Leonard. A Simplified Kinematic Wave Model at a Merge Bottleneck. *Applied Mathematical Modelling*, Elsevier Science, Volume 29, Issue 11, Pages 1054-1072, 2005.
- J06. Daiheng Ni*, John D. Leonard. Markov Chain Monte Carlo Multiple Imputation for Incomplete ITS Data Using Bayesian Networks. *Transportation Research Record 1935*, Pages 57-67, 2005.
- J05. Daiheng Ni*, John D. Leonard, Angshuman Guin, and Chunxia Feng. A Multiple Imputation Scheme for Overcoming the Missing Values and Variability Issues in ITS Data. *ASCE Journal of Transportation Engineering*. Volume 131, Issue 12, Pages 931-938, 2005.
- J04. Daiheng Ni* and John D. Leonard. Development of TrafficXML: the Common Vocabulary for Traffic Simulation. *Transportation Research Record 1879*, Pages 30-40, 2004.
- J03. Daiheng Ni*, John D. Leonard, Angshuman Guin, and Billy M. Williams. A Systematic Approach for Validating Traffic Simulation Models. *Transportation Research Record 1876*, Pages 20-31, 2004.
- J02. Daiheng Ni* and Yu Qun. A Neural Network for Handling Stability of Driver-Vehicle-Environment Closed-Loop System (In Chinese). *Journal of China Agricultural University*. Volume 1, Issue 2, 1996
- J01. Daiheng Ni*. An Application for Neural Network in Highway Communication – Simulation of Vehicle Steering (In Chinese). *Journal of Northern Jiaotong University*. Volume 19, Pages 114-117, 1995.

B. Publications in Conference Proceedings

- C51 Michael Plotnikov, Daiheng Ni*, and John Collura. The State of the Practice of UAS Applications in Transportation (Paper # 18-03694). Accepted for presentation by the 97th Transportation Research Board (TRB) Annual Meeting, Washington, D.C. 2018.
- C50 Anthony Battista and Daiheng Ni*. A Comparison of Traffic Organization Methods for Small Unmanned Aircraft Systems (Paper # 18-02539). Accepted for presentation by the 97th Transportation Research Board (TRB) Annual Meeting, Washington, D.C. 2018.
- C49 Tao Jiang, Song Gao*, Daiheng Ni, Yue Tang. A Field Study of Effectiveness of EcoDriving: Real-Time Feedback and Classroom Training

(Paper # 18-03492). Accepted for presentation by the 97th Transportation Research Board (TRB) Annual Meeting, Washington, D.C. 2018.

- C48 Jared Geller and Daiheng Ni*. Operational Organization of Small Unmanned Aerial System Physical Airspace. Online compendium (Paper # 17-02613). The 96th Transportation Research Board (TRB) Annual Meeting, Washington, D.C. 2017.
- C47 Anthony Battista and Daiheng Ni*. Modeling Of sUAS Traffic Flow Under External Force. Online compendium (Paper # 17-02586). The 96th Transportation Research Board (TRB) Annual Meeting, Washington, D.C. 2017.
- C46 Chris Boselli, Jason Danis, Sandra McQueen, and Alex Breger, Tao Jiang, Douglas Looze, and Daiheng Ni*. ASPECTS – A Solution to Airport Secure Perimeter Control against sUAS. Online compendium (Paper # 17-02607). The 96th Transportation Research Board (TRB) Annual Meeting, Washington, D.C. 2017.
- C45 Anthony Battista, Daiheng Ni*, and Jared Geller. Designing air corridors for sUAS in consideration of aerial traffic hazards. Paper #: FrATT1.3, Conference Proceedings of 2016 International Conference on Unmanned Aircraft Systems (ICUAS'16), Key Bridge Marriott Arlington, VA 22209, USA, June 7-10, 2016.
- C44 Jared Geller, Tao Jiang, Daiheng Ni*, and John Collura. Traffic Management for Small Unmanned Aerial Systems (sUAS): Towards the Development of a Concept of Operations and System Architecture. Pre-print CD-ROM, Paper #: 16-3533, The 95th Transportation Research Board (TRB) Annual Meeting, Washington, D.C. 2016.
- C43 Daiheng Ni. A field theory based operational control for sUAS. Research Meeting on Sense and Avoid (SAA) for small Unmanned Aircraft Systems (sUAS), NASA Ames Research Center, Moffett Field, CA 94035. 2015.
- C42 Daiheng Ni*, Linbo Li, Haizhong Wang, Chaoqun Jia. Human Factors In Fundamental Diagram. Symposium Celebrating 50 Years of Traffic Flow Theory. Portland, Oregon. 2014.
- C41 Andrew Leo Berthaume*, Matthew R. E. Romoser, John Collura, Daiheng Ni. Towards a social psychology-based microscopic model of driver behavior and decision-making: modifying Lewin's Field Theory. 5th International Conference on Ambient Systems, Networks and Technologies (ANT-2014). Hasselt, Belgium. June, 2014

- C40 Tian Zhou, Lixin Gao*, and Daiheng Ni, Road Traffic Prediction by Incorporating Online Information. Workshop on Connecting Online & Offline Life (COOL), Seoul, Korea. April, 2014.
- C39 Daiheng Ni. Field Theory in Agent-Based Driver Modeling. Conference on Agent-Based Modeling in Transportation Planning and Operations. The Inn at Virginia Tech, September 2013.
- C38. Chaoqun Jia*, Qiao Li, Samuel Oppong, Daiheng **Ni**, John Collura, and Paul W. Shuldiner. Evaluation of Alternative Technologies to Estimate Travel Time on Rural Interstates. Online compendium (Paper # 13-3892). The 92nd Transportation Research Board (TRB) Annual Meeting, Washington, D.C. 2013.
- C37. Chaoqun Jia* and Daiheng **Ni**. Efficient Methodology for Calibrating Traffic Flow Models Based on Bisection Analysis. Online compendium (Paper # 13-3932). The 92nd Transportation Research Board (TRB) Annual Meeting, Washington, D.C. 2013.
- C36. D. **Ni***, H. Liu, Y. Xie, W. Ding, H. Wang, H. Pishro-Nik, Q. Yu, M. Ferreira. Virtual Lab of Connected Vehicle Technology. 2012 Spring Simulation Multiconference, 2012
- C35. Daiheng **Ni***, John D. Leonard, Gabriel Leiner, and Chaoqun Jia. Vehicle Longitudinal Control and Traffic Stream Modeling. Online compendium (Paper # 12-0156). The 91st Transportation Research Board (TRB) Annual Meeting, Washington, D.C. 2012.
- C34. Gabriel Leiner*, Chaoqun Jia, Daiheng **Ni**, and John D. Leonard. Driver Dynamics and the Longitudinal Control Model. Online compendium (Paper # 12-0235). The 91st Transportation Research Board (TRB) Annual Meeting, Washington, D.C. 2012.
- C33. Haizhong Wang*, Zhixia Li, David S. Hurwitz, and Daiheng **Ni**. Driver Traffic Speed Variance Modeling with Application in Travel Time Variability Estimation. Online compendium (Paper # 12-2618). The 91st Transportation Research Board (TRB) Annual Meeting, Washington, D.C. 2012.
- C32. Daiheng **Ni***, Hong Liu, Wei Ding, Yuanchang Xie, Honggang Wang, Hossein Pishro-Nik, and Qian Yu. Cyber-Physical Integration to Connect Vehicles for Transformed Transportation Safety and Efficiency. 25th International Conference on Industrial, Engineering & Other Applications of Applied Intelligent Systems 2012 (IEA/AIE 2012), Jun2, 2012. Dalian, China.

- C31. Gabriel Leiner, Hossein Pishro-Nik, Daiheng **Ni***, Sean Morrell, Daniel Marcq, Jarrod LaBarge, Anthony Swochak. Project Crossroads: Vehicular Ad-Hoc Network for Collision Warning. *2011 IEEE International Conference on Vehicular Electronics and Safety*. July 10-12, 2011 Beijing.
- C30. Daiheng **Ni***. A Unified Perspective on Traffic Flow Theory, Part I: The Field Theory. The proceedings of *ASCE-ICCTP 2011* (Paper# 30). August 14-17, 2011. Nanjing, China.
- C29. Daiheng **Ni***. A Unified Perspective on Traffic Flow Theory, Part II: The Unified Diagram. The proceedings of *ASCE-ICCTP 2011* (Paper# 31). August 14-17, 2011. Nanjing, China.
- C28. Daiheng **Ni***, Cheng Zhang, and Haizhong Wang. A Unified Perspective on Traffic Flow Theory, Part III: Validation and Benchmarking. The proceedings of *ASCE-ICCTP 2011* (Paper# 32). August 14-17, 2011. Nanjing, China.
- C27. Hong Liu*, Qian Yu, Wei Ding, Daiheng **Ni**, Honggang Wang, and Stephen Shannon. Feasibility Study For Automatic Calibration Of Transportation Simulation Models. *2011 Spring Simulation Multiconference* (SpringSim'11). Boston, MA. April 4-7, 2011.
- C26. Daiheng **Ni***, Jia Li, Steven Andrews, and Haizhong Wang. Preliminary Estimate of Highway Capacity Benefit Attainable with IntelliDrive Technologies. *13th International IEEE Conference on Intelligent Transportation Systems*. Madeira Island, Portugal, September 19-22, 2010.
- C25. Daiheng **Ni***. A Spectrum of Traffic Flow Modeling at Multiple Scales. *Winter Simulation Conference 2010*. Baltimore, Maryland. December 3-6, 2010. (15 pages).
- C24. Haizhong Wang, Jia Li, Qian-Yong Chen, Daiheng **Ni***. Representing the Fundamental Diagram: the Pursuit of Mathematical Elegance and Empirical Accuracy. Pre-print CD-ROM, the 89th *Transportation Research Board (TRB) Annual Meeting*, Washington, D.C. 2010. (Paper # 10-1354, 22 pages).
- C23. Haizhong Wang*, Steven Andrews, John Collura, Daiheng **Ni**. Scenario-based Analysis of Transportation Impacts in Case of Dam Failure Flood Evacuation in Franklin County, Massachusetts. Pre-print CD-ROM, the 89th *Transportation Research Board (TRB) Annual Meeting*, Washington, D.C. 2010. (Paper # 10-1352, 20 pages).

- C22. Jia Li, Qian-Yong Chen, Haizhong Wang, and Daiheng **Ni***. Analysis of LWR Model with Fundamental Diagram Subject to Uncertainties. Pre-print CD-ROM, the 88th *Transportation Research Board (TRB) Annual Meeting*, Washington, D.C. 2009. (Paper # 09-1189, 14 pages).
- C21. Haizhong Wang, Jia Li, Qian-Yong Chen, Daiheng **Ni***. Speed-Density Relationship: from Deterministic to Stochastic. Pre-print CD-ROM, the 88th *Transportation Research Board (TRB) Annual Meeting*, Washington, D.C. 2009. (Paper # 09-1527, 20 pages).
- C20. Kimberly Rudy, Haizhong Wang, and Daiheng **Ni***. Modeling and Optimization of Link Traffic Flow. Pre-print CD-ROM, the 87th *Transportation Research Board (TRB) Annual Meeting*, Washington, D.C. 2008. (Paper #08-2129, 16 pages)
- C19. Dwayne Henclewood and Daiheng **Ni***. The Development of a Dynamic-Interactive-Vehicle Model for Modeling Traffic beyond A Microscopic Level. Pre-print CD-ROM, the 87th *Transportation Research Board (TRB) Annual Meeting*, Washington, D.C. 2008. (Paper #08-3059, 15 pages)
- C18. Kevin D. Moriarty*, John Collura, Michael Knodler, Daiheng **Ni**, and Kevin Heaslip. Using Simulation Models to Assess the Impacts of Highway Work Zone Strategies: Case Studies along Interstate Highways in Massachusetts and Rhode Island. Pre-print CD-ROM, the 87th *Transportation Research Board (TRB) Annual Meeting*, Washington, D.C. 2008. (Paper #08-2218, 16 pages)
- C17. H. Pishro-Nik*, A. Ganz, D. **Ni**. The Capacity of Vehicular Ad Hoc Networks. *Forty-Fifth Annual Allerton Conference on Communication, Control, and Computing*. Allerton House, Monticello, IL. September 26-28, 2007. (Paper #FrA1.6, 8 pages)
- C16. W. L. Leow*, H. Pishro-Nik and D. **Ni**. Delay and Energy Tradeoff in Multi-state Wireless Sensor Networks. *IEEE Global Telecommunications Conference*. Washington, D.C. November 26-30, 2007. Pages 1028-1032
- C15. Daiheng **Ni***, Hossein Pishro-Nik, Richa Prasad, Mohammed Raza Kanjee, Hui Zhu, and Thai Nguyen. Development of a Prototype Intersection Collision Avoidance System under VII. Proceedings of the 14th *World Congress on Intelligent Transport Systems*. Beijing Exhibition Center. Beijing, China. October 9-13, 2007. (Paper #4001, 14 pages)
- C14. Kevin D. Moriarty*, Daiheng **Ni**, and John Collura. Modeling Traffic Flow under Emergency Evacuation Situations: Current Practice and Future Directions. Pre-print CD-ROM, the 86th *Transportation Research Board*

(TRB) Annual Meeting, Washington, D.C., January 21–25, 2007. (Paper #07-0745, 15 pages)

- C13. Daiheng Ni*. A Framework for new Generation Transportation Simulation. *Winter Simulation Conference (WSC) 2006*. Monterey, California, USA. December 3-6, 2006. Pages 1508-1514
- C12. Daiheng Ni* and John D. Leonard. Direct Methods of Determining Traffic Stream Characteristics by Definition. Pre-print CD-ROM, the 85th *Transportation Research Board (TRB) Annual Meeting*, Washington, D.C., January 22–26, 2006. (Paper #06-0241, 15 pages)
- C11. Daiheng Ni*, John D. Leonard. Markov Chain Monte Carlo Multiple Imputation for Incomplete ITS Data Using Bayesian Networks. Pre-print CD-ROM, the 84th *Transportation Research Board (TRB) Annual Meeting*, Washington, D.C., January 9–13, 2005.
- C10. Daiheng Ni* and Keith Strickland. I-85 Traffic Study: A State-of-the-Practice Modeling of Freeway Traffic Operation. *Proceedings of the 2004 Summer Computer Simulation Conference (SCSC 2004*, ed. Bruzzone, A. G. and Williams, E.), The Society for Modeling and Simulation International. Pages 399-404. 2004.
- C09. Daiheng Ni* and John D. Leonard. Simplified Kinematic Waves at a Diverge. *The 8th World Multiconference on Systemics, Cybernetics and Informatics (SCI 2004)*, International Institute of Informatics and Systemics, 2004.
- C08. Daiheng Ni* and John D. Leonard. A Kinematic Wave Model for Merge Queuing. *The International Conference on Computing, Communications and Control Technologies (CCCT'04)*, International Institute of Informatics and Systemics, 2004.
- C07. Angshuman Guin*, Billy M. Williams, and Daiheng Ni. Assessment of the Current Status of Incident Detection Algorithms: Results of a Nationwide Survey. *Proceedings of the 2004 Summer Computer Simulation Conference (SCSC 2004*, ed. Bruzzone, A. G. and Williams, E.), The Society for Modeling and Simulation International. Pages 412-417. 2004.
- C06. Daiheng Ni*. 2DSIM: A Prototype of Nanoscopic Traffic Simulation, *Proceedings of The 2003 Intelligent Vehicles Symposium*, Pages 47-52, Institute of Electrical and Electronics Engineers, Piscataway, NJ.
- C05. Daiheng Ni* and John D. Leonard. Simulation of Freeway Merging and Diverging Behavior. *Proceedings of the 2003 Winter Simulation Conference* (S. Chick, P. J. Sánchez, D. Ferrin, and D. J. Morrice, eds),

Institute of Electrical and Electronics Engineers, Piscataway, NJ. Pages 1693-1700. 2003.

- C04. Daiheng Ni*. A Unified Perspective on Traffic Flow Theory: The Field Theory. *TRB Traffic Flow Theory and Characteristics Committee (AHB45) 2010 Summer Meeting and Conference*, July 7-9, 2010 Annecy, France.
- C03. Jia Li, Qian-Yong Chen, Haizhong Wang, and Daiheng Ni*. Investigation of LWR Model with Flux Function Driven by Random Free Flow Speed. *Symposium on the Fundamental Diagram: 75 years*. Woods Hole, Massachusetts. July 8 - 10, 2008. (Paper #A-4, 10 pages).
- C02. Daiheng Ni* and Chunxia Feng. China's Logistics Industry and WTO: A Trend of Globalization. *The 38th Annual International Conference and Exhibition (SOLE 2003)*, Huntsville, Alabama. USA. August 10 - 14, 2003.
- C01. Daiheng Ni*. A Two Dimensional Traffic Simulation Model. *Driving Simulation Conference*, Paris, France. September 11 - 13, 2002.

V. Sponsored Research

As Principal Investigator (PI) or otherwise noted

Active Grants / Contracts

Daiheng Ni. Driver Modeling to Predict Operational Control on a Short Horizon. Toyota Motor Eng. and Mfg N. America Inc (TEMA). \$406,348. 2017-2021.

Daiheng Ni. Supplementary Vehicle Positioning to Connected Vehicles. USDOT University Transportation Center (UTC) Region One. \$125,116.

VI. Services

Member, Committee on Traffic Flow Theory and Characteristics (AHB45), Transportation Research Board, National Research Council. 2008-2013

Co-Chair of Research Needs and Resources Task Group. Joint Simulation Subcommittee (SimSub, AHB45(1)), Transportation Research Board, National Research Council.

Member, Archived Data User Service (ADUS) Subcommittee (AFD30(1)),
Transportation Research Board, National Research Council.

Friend, Committee on Vehicle-Highway Automation (AHB30), Transportation
Research Board, National Research Council.

Panelist, National Science Foundation (NSF).

Head Guest Editor. Special Issue on Unmanned Aircraft System and its
Applications in Transportation. Journal of Advanced Transportation. 2016.

Guest Editor. Special Issue on Unmanned Aerial Vehicles. International Journal
of Transportation Science and Technology, Elsevier B.V. 2016.

Associate Editor, Technical Program Committee of the 13th International IEEE
Conference on Intelligent Transportation Systems (ITSC 2010).

Associate Editor, Technical Program Committee of the 12th International IEEE
Conference on Intelligent Transportation Systems (ITSC 2009).

As ad-hoc reviewer for

- Simulation Modelling Practice and Theory
- Transportation Science. INFORMS.
- Transportation Research Part A: Policy and Practice. Elsevier Science.
- Transportation Research Part B: Methodological. Elsevier.
- Transportation Research Part C: Emerging Technologies. Elsevier.
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