

Noah J. Goodall, Ph.D., P.E.

Senior Research Scientist, Virginia Transportation Research Council
A division of the Virginia Department of Transportation
530 Edgemont Road, Charlottesville, Virginia 22903
(434) 293-1905, noah.goodall@vdot.virginia.gov

Education

Ph.D. Civil Engineering. University of Virginia, May 2013

Dissertation: *Traffic Signal Control with Connected Vehicles*

Advisors: Brian L. Smith and Byungkyu “Brian” Park

M.S. Civil Engineering. University of Virginia, January 2010

Thesis: *What Drives Single Occupant Traveler Decisions in HOT Lanes?*

Advisor: Brian L. Smith

B.S. Civil Engineering. University of Virginia, May 2004

Professional Experience – Academic

Senior Research Scientist, Virginia Transportation Research Council, a partnership
between the Virginia Department of Transportation and the University of Virginia
March 2011 – Present

Graduate Research Assistant, University of Virginia
August 2008 – March 2011

Peer-reviewed Journal Articles

1. Goodall, Noah and Eun (Tina) Lee. Comparison of Waze Crash and Disabled Vehicle Records with Video Ground Truth. *Transportation Research Interdisciplinary Perspectives*, forthcoming.
2. Goodall, Noah. More than Trolleys: Plausible, Ethically Ambiguous Scenarios likely to Be Encountered by Automated Vehicles. *Transfers: Interdisciplinary Journal of Mobility Studies*, forthcoming.
3. Goodall, Noah. Probability of Secondary Crash Occurrence on Freeways with the Use of Private-Sector Speed Data. *Transportation Research Record: Journal of the Transportation Research Board*, No. 2635, 2017, pp. 11-18. doi:10.3141/2635-02.
4. Goodall, Noah. Fundamental Characteristics of Wi-Fi and Wireless Local Area Network Re-identification for Transportation. *IET Intelligent Transport Systems*, 11(1), February 2017, pp. 37-43. doi:10.1049/iet-its.2016.0087.
5. Goodall, Noah. Away from Trolley Problems and Toward Risk Management. *Applied Artificial Intelligence*, 30(8), 2016, pp. 810-821. doi:10.1080/08839514.2016.1229922.
6. Goodall, Noah, Brian L. Smith, and Byungkyu “Brian” Park. Microscopic Estimation of Freeway Vehicle Positions from the Behavior of Connected Vehicles. *Journal of Intelligent Transportation Systems: Technology, Planning, and Operations*, 20(1), 2016, pp. 45-54. doi:10.1080/15472450.2014.889926.
7. Goodall, Noah. Ethical Decision Making during Automated Vehicle Crashes. *Transportation Research Record: Journal of the Transportation Research Board*, No. 2424, 2014, pp. 58-65. doi:10.3141/2424-07.

8. Goodall, Noah, Brian L. Smith, and Byungkyu “Brian” Park. Microscopic Estimation of Arterial Vehicle Positions in a Low-Penetration-Rate Connected Vehicle Environment. *Journal of Transportation Engineering*, 140(10), October 2014. doi:10.1061/(ASCE)TE.1943-5436.0000716.
9. Goodall, Noah, Brian L. Smith, and Byungkyu “Brian” Park. Traffic Signal Control with Connected Vehicles. *Transportation Research Record: Journal of the Transportation Research Board*, No. 2381, 2013, pp. 65-72. doi:10.3141/2381-08.
10. Goodall, Noah and Brian L. Smith. What Drives Decisions of Single-Occupant Travelers in High-Occupancy Vehicle Lanes? Investigation Using Archived Traffic and Tolling Data from MnPASS Express Lanes. *Transportation Research Record: Journal of the Transportation Research Board*, No. 2178, 2010, pp. 156-161. doi:10.3141/2178-17.

Articles under Review

1. Goodall, Noah. Ethics of Large-Area Travel Bans with Autonomous Vehicles.

Articles in Progress

2. Goodall, Noah. It Could Happen: A Plausible Autonomous Vehicle Trolley Dilemma.
3. Goodall, Noah. Comparison of Struck-from-behind Crash Rates for Automated and Conventional Vehicles.
4. Goodall, Noah. A Rational Fear of Flying.
5. Goodall, Noah. Legal and Operational Challenges with Remote Operation of Vehicles.

Book Chapters

1. Goodall, Noah. Machine Ethics and Automated Vehicles. In Gereon Meyer and Sven Beiker (eds.), *Road Vehicle Automation*, Springer, 2014, pp. 93-102. doi:10.1007/978-3-319-05990-7_9.

Refereed Proceedings

1. Goodall, Noah. Effect of Signal Control on Bimodal Travel Time Distributions. *Proceedings of the 97th Annual Meeting of the Transportation Research Board*. Washington, DC. January 2018. *Presented by Noah Goodall*.
2. Goodall, Noah. Vehicle Automation and the Duty to Act. *Proceedings of the 21st World Congress on Intelligent Transport Systems*. Detroit, MI. September 2014. *Presented by Noah Goodall*.
3. Abbas, Montasir, Alejandra Medina, Linsen Chong, Bryan Higgs, Catherine McGhee, Michael Fontaine, and Noah Goodall. Driver Behavior in Traffic. *Proceedings of the 3rd International Symposium on Naturalistic Driving Research*. Blacksburg, VA. August 2012. *Presented by Montasir Abbas*.
4. Goodall, Noah, Brian L. Smith, and Byungkyu “Brian” Park. Microscopic Estimation of Freeway Vehicle Positions Using Mobile Sensors. *Proceedings of the 91st Annual Meeting of the Transportation Research Board*. Washington, DC. January 2012. *Presented by Noah Goodall*.
5. Goodall, Noah, Brian L. Smith, and Ramkumar Venkatanarayana. Arterial Performance Measures in a Connected Vehicle Environment. *Proceedings of the 18th*

World Congress on Intelligent Transportation Systems. Orlando, FL. October 2011.
Presented by Noah Goodall.

6. Smith, Brian L., Kristi Byrne, Rachel Copperman, Susan Hennessy, and Noah Goodall. An Investigation into the Impact of Rainfall on Freeway Traffic Flow. *Proceedings of the 83rd Annual Meeting of the Transportation Research Board*. Washington, DC. January 2004. *Presented by Brian L. Smith.*

Book Reviews

1. Goodall, Noah. How to Think About Driverless Vehicles: Review of *Driverless* by Hod Lipson and Melba Kurman. *American Journal of Public Health*, 108(9), September 2018, pp. 1112-1113. doi:10.2105/AJPH.2018.304572.

Invited Editorials

1. Goodall, Noah. From Trolleys to Risk: Models for Ethical Autonomous Driving. *American Journal of Public Health*, 107(4), April 2017, pp. 496. doi:10.2105/AJPH.2017.303672.

White Papers

1. Pajewski, Michael and Noah Goodall. Potential Legal Barriers to Vehicle Automation in Virginia. August 2016.

Conference, Workshop, and Seminar Presentations

1. *Verifying Crowdsourced Crash and Disabled Vehicle Reports from Waze*. Association of State Highway Engineers, Mid-Atlantic Region Annual Meeting. University of Virginia. Charlottesville, Virginia. March 2019.
2. *Vehicle Automation and the Ethics of Risk*. Symposium on Trust and Ethics of Autonomous Vehicles. MIT Media Lab, Berkman Klein Center for Internet and Society at Harvard University, and Institute for Advanced Study in Toulouse. Cambridge, Massachusetts. May 2018.
3. *Ethics of Connected and Automated Vehicles*. Annual International Road Safety Conference. Irish Road Safety Authority. Dublin, Ireland. May 2018.
4. *Ethical Decision Making During Automated Vehicle Crashes*. Graduate Seminars in Injury Research and Policy: Current Issues at Intersection of Transportation Safety and Technology Seminar Series. Johns Hopkins Center for Injury Research and Policy and the Department of Health Policy and Management. Baltimore, Maryland. January 2018.
5. *Risk Management: Applying Ethics to Engineering Problems*. Artificial Ethics Symposium. University of Southampton, Southampton, UK. December 2017.
6. *Ethics and Risk Management in Routine Automated Driving*. Workshop on the Ethics of Automated Vehicles. Toulouse, France. September 2017.
7. *Impacts of Vehicle Automation*. Virginia Highway Safety Summit. Richmond, VA. May 2017.
8. *Ethics of Autonomous Vehicles: Who's in the Driver's Seat?* National Society of Professional Engineers. Webinar. September 2016.
9. *Ethics and Automated Vehicles*. Professional Engineers Conference. Dallas, TX. June 2016.

10. *Fundamental Characteristics of Wi-Fi and Wireless Local Area Network Re-identification for Transportation*. 95th Annual Meeting of the Transportation Research Board. Washington, DC. January 2016.
11. *Ethical Issues for Road Vehicle Automation*. 95th Annual Meeting of the Transportation Research Board. Washington, DC. January 2016.
12. *Ethics and Risk Management for Automated Vehicles*. 95th Annual Meeting of the Transportation Research Board. Washington, DC. January 2016.
13. *Ethical Decision Making for Automated Vehicles*. Society of Automotive Engineers Detroit Chapter's Young Automotive Professionals Conference. Chelsea, MI. June 2015.
14. *Ethical Decision Making Systems for Automated Vehicles*. American Society of Highway Engineers Mid-Atlantic Spring Technical Conference. Williamsburg, VA. April 2014.
15. *Microscopic Estimation of Arterial Vehicle Positions in a Low Penetration Rate Connected Vehicle Environment*. 93rd Annual Meeting of the Transportation Research Board. Washington, DC. January 2014.
16. *Ethical Decision Making in Automated Vehicles During Unavoidable Crashes*. Transportation Research Board's Second Annual Workshop on Road Vehicle Automation. Stanford, CA. July 2013.
17. *Connected Vehicles*. American Society of Highway Engineers Mid-Atlantic Spring Technical Conference. Charlottesville, VA. April 2013.
18. *Real-time Microscopic Estimation of Freeway Vehicle Positions from the Behaviors of Probe Vehicles*. Intelligent Transportation Society of Virginia Annual Meeting. Richmond, VA. April 2012. With Brian L. Smith and Byungkyu "Brian" Park.
19. *VDOT's Connected Vehicle Program*. Virginia Center for Transportation Innovation and Research: Research Summit. Charlottesville, VA. March 2012.
20. *Microscopic Estimation of Freeway Vehicle Positions from the Behaviors of Probe Vehicles*. University of Virginia Engineering Research Symposium. Charlottesville, VA. March 2012. With Brian L. Smith and Byungkyu "Brian" Park.
21. *Traffic Signal Control with Connected Vehicles*. University of Virginia Civil Engineering Graduate Student Seminar. Charlottesville, VA. January 2012. With Brian L. Smith and Byungkyu "Brian" Park.
22. *Traffic Signal Control with Connected Vehicles*. Virginia Section of the Institute of Transportation Engineers Annual Meeting. Rockfish, VA. October 2011. With Brian L. Smith and Byungkyu "Brian" Park.
23. *Traffic Signal Control Algorithms Utilizing Unique IntelliDriveSM Capabilities*. 90th Annual Meeting of the Transportation Research Board. Washington, DC, January 2011. With B.L. Smith, R. Venkatanarayana, H. Park, and C. Skerrit.
24. *Adaptive Traffic Signal Control with IntelliDriveSM: A Predictive Microscopic Simulation Algorithm*. 90th Annual Meeting of the Transportation Research Board. Washington, DC. January 2011. With Brian L. Smith.

Other Presentations of Research

1. Panelist. Us & Them: Living with Robots. King's Transnational Law Summit. King's College London. London, England. April 2018.

2. Panelist. Examining the Ethical, Legal, and Social Implications of a Driverless Future. The Global Challenges Roundtable Series. Purdue University and the Howard Baker Forum. Washington, DC. January 25, 2018.
3. *Update on Automated and Self-Driving Vehicles*. Elderly and Disability Advisory Committee. Richmond, VA. May 17, 2017.
4. Panelist. Incorporating Ethics into Artificial Intelligence. George Washington University Institute for Communitarian Policy Studies. Washington, DC. March 3-5, 2017.
5. Panelist. Moral Algorithms: The Ethics of Autonomous Vehicles. Ohio State University Center for Ethics and Human Values. Columbus, OH. April 18, 2016.
6. *Preparing Virginia's Highways for Automated Vehicles*. 3rd Annual Richmond Region Transportation Forum. Ashland, VA. March 2016.
7. Panelist. Towards Programming Ethics in Autonomous Vehicles. Stanford, CA. June 2015.
8. *Connected and Automated Vehicles*. American Society of Civil Engineers, Virginia Section, Richmond Branch. Richmond, VA. January 2014.
9. *VDOT's Connected Vehicle Program*. American Society of Highway Engineers Old Dominion Section Meeting. Richmond, VA. June 2013.
10. *U.Va. Engineering, Work, and Back: Lessons Learned and New Challenges*. University of Virginia Engineering Student Council, Rotunda Dinner. Charlottesville, VA. November 2010.

Media Articles

1. Video of Uber Self-Driving Car's Fatal Crash Raises More Questions. *IEEE Spectrum*, "Cars that Think" Blog. March 23, 2018. <https://spectrum.ieee.org/cars-that-think/transportation/safety/video-of-uber-selfdriving-cars-fatal-crash-raises-more-questions>
2. Can You Program Ethics into a Self-Driving Car? *IEEE Spectrum*. June 2016.

Technical Reports

1. Dougald, Lance, Noah Goodall, and Ramkumar Venkatanarayana. *Traffic Incident Management Quick Clearance Guidance and Implications*. Virginia Transportation Research Council. VTRC 16-R9. 2016.
2. Goodall, Noah. *Real-Time Prediction of Vehicle Locations in a Connected Vehicle Environment*. Virginia Center for Transportation Innovation and Research. VCTIR 14-R4. 2013.
3. Smith, Brian L., Ramkumar Venkatanarayana, Hyungjun Park, Noah Goodall, Jay Datesh, and Corbin Skerrit. *Deployment Analysis of Traffic Signal Control Algorithms in an IntelliDriveSM Environment*. IntelliDriveSM Pooled Fund Study Report. 2010.
4. Smith, Brian L., Ramkumar Venkatanarayana, Hyungjun Park, Noah Goodall, Jay Datesh, and Corbin Skerrit. *Report on the Investigation of IntelliDriveSM Data Sources*. IntelliDriveSM Pooled Fund Study Report. 2010.
5. Smith, Brian L., Ramkumar Venkatanarayana, Hyungjun Park, Noah Goodall, Jay Datesh, and Corbin Skerrit. *Report on Evaluation Results of Traffic Signal Control*

- Algorithms in the Simulated IntelliDriveSM Environment*. IntelliDriveSM Pooled Fund Study Report. 2010.
6. Smith, Brian L., Ramkumar Venkatanarayana, Hyungjun Park, Noah Goodall, Jay Datesh, and Corbin Skerrit. *Report on Measures of Effectiveness and their Collection in the Simulated IntelliDriveSM Environment*. IntelliDriveSM Pooled Fund Study Report. 2010.
 7. Smith, Brian L., Ramkumar Venkatanarayana, Hyungjun Park, Noah Goodall, Jay Datesh, and Corbin Skerrit. *Development of New Traffic Control Signal Algorithms under IntelliDriveSM*. IntelliDriveSM Pooled Fund Study Report. 2010.
 8. Goodall, Noah and Brian L. Smith. *Single Occupancy Vehicle (SOV) Behavior in High Occupancy Toll (HOT) Facilities*. Mid-Atlantic Universities Transportation Center. UVA-2008-04. 2010.
 9. Smith, Brian L., Byungkyu “Brian” Park, Hema Tanikella, and Noah Goodall. *Preparing to Use Vehicle Infrastructure Integration (VII) in Transportation Operations: Phase II*. Virginia Transportation Research Council. VTRC 09-CR9. 2009.

Technical Assistance Reports

1. Estimating Exposure to Safety Campaigns on Changeable Message Signs. Virginia Transportation Research Council. 2018.
2. Comparison of Waze Data and Ground Truth. Virginia Transportation Research Council. 2018.
3. Use of Humor on Changeable Message Signs for Public Safety Messages. Virginia Transportation Research Council. 2017.
4. Analysis of Waze Data in Virginia. Virginia Transportation Research Council. 2017.
5. 5G and its Implications for VDOT. Virginia Transportation Research Council. 2017.
6. Evaluation of Spectra Reidentification Technologies. Virginia Transportation Research Council. 2017.
7. Safety of Alternative Fuel Vehicles in Tunnels. Virginia Transportation Research Council. 2016.
8. Literature Review of Empirical Diversion Rates. Virginia Transportation Research Council. 2016.
9. VDOT Changeable Message Sign Guidelines. Virginia Transportation Research Council. 2016.
10. VDOT Evaluation of WiFi Matching Technology. With Michael D. Fontaine. Virginia Center for Transportation Innovation and Research. 2015.
11. Re-Evaluation of Software Tools for Modeling and Simulating Roundabouts. Virginia Center for Transportation Innovation and Research. 2015.
12. Assessment of Ramp Metering Alternatives for the Virginia Department of Transportation. Virginia Center for Transportation Innovation and Research. 2013.
13. Northern Virginia US-50 (Nutley to Rosslyn) Travel Time Analysis. Virginia Center for Transportation Innovation and Research. 2013.
14. Route 1 INRIX and Bluetooth Speed Comparisons. Virginia Center for Transportation Innovation and Research. 2013.
15. Evaluation of Software Tools for Modeling and Simulating Roundabouts. Virginia Center for Transportation Innovation and Research. 2012.

16. Comparison of PeMS and RITIS Functionality. Virginia Center for Transportation Innovation and Research. 2012.
17. VDOT Mountain Tunnel Guide and Standard Operating Procedures. Virginia Center for Transportation Innovation and Research. 2012.

Research Grants and Contracts

1. “Automated Shuttle Evaluation Support,” *Virginia Department of Transportation*, PI, \$65,000, 2019-2020.
2. “Evaluation of Bus Collision Avoidance and Warning System,” *Virginia Department of Transportation*. Co-PI with Peter Ohlms. \$58,476 NJG share of \$124,770, 2019-2021.
3. “Car-following Characteristics of Adaptive Cruise Control from Empirical Data,” *Virginia Department of Transportation*, Co-PI with Chien-Lun Lan, \$27,546 NJG share of \$56,258, 2018-2019.
4. “Assessment of Capacity Changes Due to Automated Vehicles on Freeway Corridors,” *Virginia Department of Transportation*, Co-PI with Kevin Heaslip of Virginia Tech, \$57,634 NJG share of \$217,634, 2018-2019.
5. “VDOT Travel Time Research Program Year 3,” *Virginia Department of Transportation*, Co-PI with Michael Fontaine and Ramkumar Venkatanarayana, \$17,827 NJG share of \$63,358. 2018-2019.
6. VDOT Travel Time Research Program Year 2,” *Virginia Department of Transportation*, Co-PI with Michael Fontaine and Ramkumar Venkatanarayana, \$16,022 NJG share of \$56,942. 2017-2018.
7. “VDOT Travel Time Research Program,” *Virginia Department of Transportation*, Co-PI with Michael Fontaine and Ramkumar Venkatanarayana, \$18,551 NJG share of \$92,861, 2016-2017.
8. “Evaluation of Travel Time Prediction Products,” *Virginia Department of Transportation*, PI, \$54,705, 2016-2017.
9. “Preparing for Automated Vehicles in Virginia,” *Virginia Department of Transportation*, PI, \$94,320, 2015-2018.
10. “Autonomous Vehicles: Ethics, Design, and Risk,” *National Science Foundation*, Consultant to PI Patrick Lin, \$3,000 NJG share of \$164,436 total, 2015-2016.
11. “Traffic Incident Management: Quick Clearance Guidance and Implications,” *Virginia Department of Transportation*, Co-PI with Lance Dougald and Ramkumar Venkatanarayana, \$53,000 NJG share of \$137,120 total, 2013-2015.
12. “Simulation of Adaptive Traffic Signal Systems,” *Virginia Department of Transportation*, Co-PI with Justice Appiah and Michael Fontaine, \$40,000 NJG share of \$122,653 total, 2013-2015.
13. “Real-time Prediction of Vehicle Locations in a Connected Vehicle Environment,” *Virginia Department of Transportation*, PI, \$61,000, 2011-2013.
14. “Northern Region Travel-Time Demonstration Evaluation,” *Virginia Department of Transportation*, Co-PI with Michael Fontaine and Catherine McGhee, \$20,000 NJG share of \$222,000 total, 2011-2013.

Interviews and Media

Links to select articles are available at: <http://people.virginia.edu/~njg2q/>.

1. Interviewed by George Musser for the article “Survey Polls the World: Should a Self-Driving Car Save Passengers, or Kids in the Road?” in *Scientific American*, October 24, 2018.
2. Interviewed by Cade Metz for the article “Competing with the Giants in Race to Build Self-Driving Cars” in *The New York Times*, January 4, 2018.
3. Interviewed by Eoin O’Carroll for the article “Should a self-driving car ever run people over on purpose?” in *The Christian Science Monitor*, July 7, 2017.
4. Interviewed by Aarian Marshall for the article “Lawyers, Not Ethicists, Will Solve the Robocar ‘Trolley Problem’” in *Wired*, May 28, 2017.
5. Interviewed by Henri Gendreau regarding automated vehicle ethics for *Wired*, February 28, 2017.
6. Interviewed by Alfredo Morabia on the *American Journal of Public Health* podcast, February 21, 2017.
7. Interviewed by Matt O’Brien for the article “For Driverless Cars, a Moral Dilemma: Who Lives and Who Dies?” by *The Associated Press*, January 18, 2017.
8. Interviewed by Gus Lubin for the article “Self-Driving Cars Are Already Deciding Who to Kill” in *Business Insider*, December 29, 2016.
9. Interviewed by Sophie Weiner for the article “If a Self-Driving Car Kills a Pedestrian, Who Is at Fault?” in *Gizmodo*, December 27, 2016.
10. Interviewed by Mark Smith regarding automated vehicle ethics for an article in *Gadget* magazine (UK), August 3, 2016.
11. Interviewed by Kathryn Hulick regarding automated vehicle ethics for an article in *Science News for Students*, July 13, 2016.
12. Research described in *Slate* article “The Ethical Quandary of Self-Driving Cars” by Jesse Kirkpatrick, June 6, 2016.
13. Interviewed by Daniel Sokolov regarding automated vehicle ethics for the article “Roboterethik: Das selbstfahrende Auto und seine Opfer [Roboethics: The self-driving car and its victims]” in *Heise* (Germany), January 12, 2016.
14. Interviewed by David Grossman regarding automated vehicle ethics for the segment “The Trolley Problem and the Ethics of Driverless Cars” on *BBC Newsnight*, September 21, 2015.
15. Interviewed by Ann Thompson regarding automated vehicle collision avoidance for the segment “Training Driverless Cars to be Ethical” on the WVXU Cincinnati radio program *Focus on Technology*, September 21, 2015.
16. Interviewed by Daniel Schwartz regarding automated vehicles for the article “Self-driving Cars Confront Urban Traffic Congestion” in *CBC News*, July 22, 2015.
17. Interviewed by Gabe Nelson regarding automated vehicle ethics for the article “Self-driving Cars Already Have Ethics” in *Automotive News*, June 28, 2015.
18. Interviewed by Preston Lerner regarding automated vehicles for *Automobile Magazine*, April 16, 2015.
19. Research linked to in *Fortune* article “Self-driving Cars: The First Potentially Deadly Robots?” by Jonathan Handel and Grady Johnson, February 25, 2015.
20. Interviewed by Chris Bryant regarding automated vehicle ethics for the *Financial Times*, February 13, 2015.

21. Interviewed by Adam Parsons and Mickey Clark regarding vehicle automation for the BBC Radio 5 Live program *Wake Up to Money*, February 11, 2015.
22. Interviewed by Alex Jensen regarding vehicle automation for the tbs eFM Korean radio program *This Morning*, February 10, 2015.
23. Research linked to in *New York Times* article “Are We Ready for Driverless Cars? Ethical and Efficiency Tradeoffs” by Scott Le Vine, January 29, 2015.
24. Interviewed by Justin Pritchard regarding automated vehicle ethics for the Associated Press on November 13, 2014.
25. Interviewed by Josh Max regarding automated vehicle ethics for the article “Sideswiped by a Robot” in *Long Island Pulse*, October 10, 2014.
26. Research described in *Reason* article “The Moral Case for Self-Driving Cars” by Ronald Bailey, August/September 2014.
27. Interviewed by Jared Newman regarding automated vehicle ethics for the article “How to Make Driverless Cars Behave” in *TIME.com*, June 6, 2014.
28. Research described in *Wired* article “The Robot Car of Tomorrow May Just Be Programmed to Hit You” by Patrick Lin, May 6, 2014.
29. Research described in *Latin Post* article “Google’s Self-Driving Car Costs \$75k: Not Enough Urban Miles for Reliable Safety Statistics; Is It Moral?” by Kevin Li, April 29, 2014.
30. Interviewed by Nora Young regarding automated vehicle ethics for the CBC radio program *Spark*, episode 248, April 13, 2014.
31. Interviewed by Les Sinclair regarding automated vehicle ethics for the 1070 WINA Newsradio program *Charlottesville Right Now*, April 7, 2014.
32. Research described in *Businessweek.com* article “The Problem with Self-Driving Cars: They Don’t Cry” by Kyle Stock, April 3, 2014.
33. Interviewed by De Persdient’s Paul Bots regarding automated vehicle ethics for the article “Auto Beslist over Leven en Dood [Car Decides on Life and Death]” in *Spectrum* (the Netherlands), March 15, 2014.

Licenses, Honors, and Awards

Professional Engineer, Virginia, No. 0402049285 (2011 – present)
 Virginia Transportation Research Council, Horizon Award (2013)
 Transportation Research Board's Second Annual Workshop on Road Vehicle Automation, Best Poster (2013)
 University of Virginia Engineering Research Symposium, Finalist (2012)
 University of Virginia Engineering Research Symposium, Fourth Place (2011)
 Mid-Atlantic Universities Transportation Center Student of the Year (2009)

Membership and Service to the Profession

Member and Committee Research Coordinator, Transportation Research Board Committee on Vehicle-Highway Automation, AHB30 (2016 – present)
 Member and Paper Review Coordinator, Transportation Research Board Committee on Visualization in Transportation, ABJ95 (2013 – present)
 Member, Institute of Electrical and Electronics Engineers (2015 – present)
 Member, Complete Mobility interdisciplinary research group (2016 – present)

Session Coordinator, Ethical and Social Implications at the Automated Vehicles Symposium (2017 – 2018)
Chair, National Cooperative Highway Research Program (NCHRP) project 20-102(08) *Dedicating Lanes for Priority or Exclusive Use by CVs and AVs* (2016 – 2019)
Member, Institute of Transportation Engineers, (2011 – 2012)
Reviewer for the following journals and conferences (2009 – present):
Algorithms, American Journal of Public Health, Applied Sciences, Automated Vehicles Symposium, Engineering, Ethics and Information Technology, IEEE Intelligent Vehicles Symposium, IEEE Transactions on Intelligent Transportation Systems, IET Intelligent Transportation Systems, Intelligent Transport Systems World Congress, International Journal of Traffic and Transportation Engineering, International Journal of Vehicle Design, Journal of Advanced Transportation Systems, Journal of Business Ethics, Journal of Computing in Civil Engineering (ASCE), Journal of Intelligent Transportation Systems, Journal of Transportation Engineering (ASCE), Nature Communications, Religions, Science and Engineering Ethics, Sensors, The Spectra Engineering and Science Research Journal, Transfers, Transport Reviews, Transportation Research Interdisciplinary Perspectives, Transportation Research Part A: Policy and Practice, Transportation Research Part C: Emerging Technologies, Transportation Research Record: Journal of the Transportation Research Board, Travel Behaviour and Society
Proposal reviewer for the following organizations:
American University of Sharjah
National Institute of Standards and Technology (NIST)
The Netherlands Organization for Scientific Research
Center for Innovative Technology
Taylor & Francis Group
Vice-president, Virginia Student Transportation Association, University of Virginia Chapter (2009 – 2010)
Student editor, The Spectra Engineering and Science Research Journal (2009 – 2011)

Teaching Experience

Teaching Assistant, University of Virginia
August 2010 – December 2010
Assisted the second-year undergraduate civil engineering class CE 2010: Civil Engineering Techniques. Responsible for the surveying and computer-aided design (CAD) laboratory component for 67 students. Designed and graded final project, lectured twice weekly 15-minute lessons during class, and held office hours.

Professional Experience – Non-academic

Engineer, Parsons Brinckerhoff, Herndon, VA
June 2004 – July 2006 and July 2007 – August 2008
Engineer, Telvent Farradyne, Rockville, MD
July 2006 – June 2007
Scholar Intern, Virginia Department of Transportation, Staunton, VA
Summer 2003
Engineering Intern, Indian Health Service, Wolf Point, MT

Summer 2002