

March 31, 2021

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RE: NHTSA-2020-0106-0001; Advanced Notice of Proposed Rule Making: Framework for Automated Driving System Safety

Mr. Owens-

On December 3, 2020, the National Highway Traffic Safety Administration (“NHTSA”), under the Authority granted by 49 U.S.C. 30101 *et seq.*, and 49 U.S.C. 30182, prudently published an Advanced Notice of Proposed Rule Making (“ANPRM”) in regard to the development of a regulatory framework for Automated Driving System (“ADS”) safety. I submit this comment to assist and guide NHTSA by responding to some of the published questions.

Introduction and Background

My name is Chris Roberson, and I am member of the class of 2021 at the University of Richmond T.C. Williams Law School. I am currently enrolled in a class about regulatory law and processes, and I have been asked to join the process and provide a comment. However, I am also United States citizen, taxpayer, and driver. This comment, thus, will contain both my honest and frank opinions as a citizen and my (admittedly novice) legal interpretations and evaluations of the regulatory issues implicated.

Summary of Comment

I believe that NHTSA can take advantage of the regulatory framework already in place for modern vehicles to model a framework for ADS hardware – specifically in regard to automated safety systems and sensors. Topics will address these hardware pieces. Second, Topic II will address a potentially unforeseen issue to consider in response to question seven in the ANPRM.

I. Using Existing Standards for Automated Elements

While on board computers were not an original component of cars, they have become a wholly integrated and indispensable part of modern cars.¹ Cars have more and more computers and

¹ See generally, Ben Wojdyla, *How It Works: The Computer Inside Your Car*, Popular Mechanics, <https://www.popularmechanics.com/cars/how-to/a7386/how-it-works-the-computer-inside-your-car/>, (Feb. 21, 2012); Eli Laurens, *Car Computer History*, It Still Runs, <https://itstillruns.com/car-computer-history-5082250.html>.

automated systems in them each year,² and the process by which these pieces are monitored, manufactured, where liability is assigned, and testing functionality, etc. are all questions resolved.

For example, NHTSA has researched, reported, High-Performance Computing Studies³ driving detection to Electronic Stability Control⁴ Further, NHTSA has explanations and guidance for Driver Assistance Technologies.⁵ NHTSA has received comment on Advanced Driver Assistance Systems (ADAS) Draft Research Test Procedures⁶ and continues to monitor these automated systems each model year.⁷ NHTSA has a 5-star rating system for many of the safety and component features in modern cars.⁸ In short, NHTSA has a wealth of information and strong base for any regulatory framework. Even though ADS may have a larger contingent of computing components, the current regulatory framework should be well suited to handle the hardware.

Of the four ADS functions mentioned in the ANPRM, sensing and sensors provide a great exemplar of how to use previous regulatory activities and information to instruct the creations of an ADS framework. First, NHTSA does have some history evaluating sensors.⁹ Additionally, NHTSA has recently gone through the notice and comment process to update FMVSS No. 111 to require that all passenger cars, multipurpose passenger vehicles, trucks, buses, school buses, motorcycles be equipped with one or more rearview mirrors for rear visibility.”¹⁰ Any regulations about sensors, lighting, and imaging could look to the comments received regarding FMVSS 111 in 2014 to anticipate citizen concerns as well as get a head start of workable regulations.

NHTSA can use the myriad benchmarks and its current guidelines¹¹ for vehicle components. More, in issuing the Cybersecurity Best Practices for the Safety of Modern Vehicles 2020 update,¹² NHTSA has taken the stance that software and the protection thereof has become “an aspect of safety in motor vehicles and motor vehicle equipment.”¹³ NHTSA should be able to bring new hardware and software for ADS under its regulatory control and use existing guidance and regulations to cover large portions of this new technology.

² Jim Motavalli, *The Dozens of Computers That Make Modern Cars Go (and Stop)*, THE N.Y. TIMES, <https://www.nytimes.com/2010/02/05/technology/05electronics.html> (Feb. 4, 2010).

³ Department of Transportation, *High-Performance Computing Studies*, DOT HS 812 404, <https://www.nhtsa.gov/document/high-performance-computing-studies-dot-hs-812-404> (Apr. 2017).

⁴ NHTSA, *Development of Electronic Stability Control (ESC) Performance Criteria*, NHTSA-2006-25801-0005, <https://www.regulations.gov/document/NHTSA-2006-25801-0005>.

⁵ NHTSA, *Driver Assistance Technologies*, <https://www.nhtsa.gov/equipment/driver-assistance-technologies/>.

⁶ NHTSA, *Advanced Driver Assistance Systems Draft Research Test Procedures*, announced via the Federal Register, 84 FR 64405; <https://www.federalregister.gov/documents/2019/11/21/2019-25217/advanced-driver-assistance-systems-draft-research-test-procedures> (Nov. 21, 2019).

⁷ NHTSA, NHTSA Announces MY2021 Vehicles for NCAP Crashworthiness and ADAS Testing, <https://www.nhtsa.gov/press-releases/2021-vehicles-for-ncap-crashworthiness-and-ad-as-testing> (Oct. 14, 2020).

⁸ NHTSA, *Ratings*, <https://www.nhtsa.gov/ratings>

⁹ NHTSA, *Assessing the Feasibility of Vehicle-based Sensors to Detect Drowsy Driving*, DOT HS 811 886, <https://www.nhtsa.gov/document/assessing-feasibility-vehicle-based-sensors-detect-drowsy-driving> (Feb. 2014).

¹⁰ NHTSA, *Federal Motor Vehicle Safety Standards; Rear Visibility*, 79 FR 19177, 49 CFR 571 (Apr. 7, 2014).

¹¹ NHTSA, *Government 5-Star Safety Ratings for Motor Vehicles Advertising and Communication Usage Guidelines*, <https://www.nhtsa.gov/ratings/government-5-star-safety-ratings-motor-vehicles-advertising-and-communication-usage>.

¹² NHTSA, *Cybersecurity Best Practices for Modern Vehicles*, announced via the Federal Register, 81 FR 75190 (Oct. 28, 2016); <https://www.regulations.gov/document/NHTSA-2020-0087-0002>

¹³ Comment for 2021 just closed March 15, 2021, per <https://www.nhtsa.gov/press-releases/cybersecurity-best-practices-comments>.

II. In Response to Question Seven, Calling for Potentially Unforeseen Concerns

NHTSA needs to decide whether the American Public and its government would be better served with a singular AI program across all ADS or individualized, proprietary AI systems?

A singular AI has implications for creating a Super Intelligence. Artificial Intelligence, while often thought to be science fiction, is a real concept of computational power that is separate and distinct from robots.¹⁴ Scientists and mathematicians foresee a moment when machine intelligence exceeds our own.¹⁵ The most advanced tier, called an artificial superintelligence, is “an intellect that is much smarter than the best human brains in practically every field, including scientific creativity, general wisdom and social skills.”¹⁶ While many in the field are optimistic about this creation and the implications for the human race associated with it, humans are “creating something that will probably change everything, but in totally uncharted territory, and we have no idea what will happen when we get there.”¹⁷

If there is a single program, to which each ADS vehicle adds its computational power, there is a real possibility that the threshold of AI super intelligence is reached.¹⁸ Nobody know exactly for sure when or if this moment will occur,¹⁹ but it is definitely being considered.²⁰ NHTSA has a duty to analyze and understand the potential effects its ultimate rule(s) will have in regard to the advancement of AI.

Contrarily, individualized, proprietary AI models may develop different patterns for interacting with each other. This will effectively create “personalities.”²¹ The question then becomes whether NHTSA and the DOT want to regulate each proprietary model. If one company’s program becomes too aggressive, or it drives too slowly in the rain, will there be a separate regulatory regime for returning these programs to a mean?²²

More, MIT’s Computer Science and Artificial Intelligence Laboratory (CSAIL) experiments with ADS have shown that AI’s can be programmed to predict human tendencies and driving personalities.²³ Would ADS personalities be modeled off real, human personalities? Or is there an ideal mean to which ADS programs will need to reach?

¹⁴ Tim Urban, *The AI Revolution: Our Immortality or Extinction*, WAIT BUT WHY, <https://waitbutwhy.com/2015/01/artificial-intelligence-revolution-1.html> (Jan. 27, 2015).

¹⁵ Vernor Vinge, *The Coming Technological Singularity: How to Survive in the Post-Human Era*, NASA LEWIS RESEARCH CENTER, <https://edoras.sdsu.edu/~vinge/misc/singularity.html> (1993).

¹⁶ Nick Bostrom, *How Long Before Super Intelligence*, OXFORD FUTURE OF HUMANITY INSTITUTE, <https://www.nickbostrom.com/superintelligence.html> (Mar. 12, 2008).

¹⁷ Tim Urban, *The AI Revolution: Our Immortality or Extinction*, WAIT BUT WHY, <https://waitbutwhy.com/2015/01/artificial-intelligence-revolution-2.html> (Jan. 27, 2015).

¹⁸ Tim Urban, *The AI Revolution: Our Immortality or Extinction*, WAIT BUT WHY, <https://waitbutwhy.com/2015/01/artificial-intelligence-revolution-1.html> (Jan. 27, 2015).

¹⁹ See Lance Eliot, *Conspiracy Theories About AI Self-Driving Cars*, AITRENDS, <https://www.aitrends.com/selfdrivingcars/conspiracy-theories-about-ai-self-driving-cars/> (Apr. 3, 2018).

²⁰ See Lance Eliot, *The AI ‘Intelligence Explosion’ Might Happen This Way, Including For AI Self-Driving Cars*, FORBES, <https://www.forbes.com/sites/lanceeliot/2020/08/23/the-ai-intelligence-explosion-might-happen-this-way-including-for-ai-self-driving-cars/?sh=70ff48dc6213> (Aug. 23, 2020).

²¹ See Hui Chia, *The ‘Personality’ in Artificial Intelligence*, <https://pursuit.unimelb.edu.au/articles/the-personality-in-artificial-intelligence> (Oct. 27, 2019).

²² See generally, *What Kind of Personality Do We Want Self-Driving Cars to Have?*, THE NEWS WHEEL, <https://thenewswheel.com/what-kind-of-personality-do-we-want-self-driving-cars-to-have/> (Nov. 22, 2019).

²³ See Rachel Gordon, *Predicting People’s Driving Personalities*, MIT NEWS, <https://news.mit.edu/2019/predicting-driving-personalities-1118> (Nov. 18, 2019).