

RBE 500 Homework #7

Arjan Gupta

Discussion Essay

Please write a two-page essay (excluding references) discussing the existing and potential ethical issues in the application domain(s) of robotics you are interested in exploring in your graduate study and future career.

In this essay, I will be exploring the ethical concerns surrounding the advent of autonomous vehicles. Specifically, I will focus on self-driving vehicles in the civilian space, such as cars, buses, and trucks. As for a geographical and cultural focus, this essay will mostly take on a perspective encapsulated by transportation and traffic sensibilities within the United States of America.

The V. Müller report states that a problem qualifies as a problem for AI/robot ethics if we do *not* readily know what the right thing to do is, further causing us to not readily know the answers to certain questions. ^[2] There are several such unanswered questions with regard to level 5, full driving automation cars, as defined by the Society of Automotive Engineers. ^[1] Such vehicles will not even have steering wheels or acceleration/breaking pedals! ^[4] Let us ponder on that for a moment. I ask the reader to imagine themselves in a car that just moves, without the ability to override any controls. Personally, I am a big fan of cruise-control and steering assistance in my own car, but I am not sure I would feel comfortable sitting in a car without the ability to override its controls. While this feels like a small thought experiment, it is in fact a question of ethics. Acceptance of level 5 autonomous cars requires humans to ‘trust’ a machine, and just how averse will human society be towards this? Level 5 autonomy might become technologically possible, but will humans actually want to use it?

A survey conducted by Policygenius found that 76% of Americans feel less safe driving or riding in cars with self-driving features. ^[3] This seems like an astonishingly high number, but is perhaps understandable. Before any major technological advancement, humans have usually felt skeptical of the technology in question. Most humans likely felt unsafe traveling in commercial aircraft when it first came into existence. Yet, if we glance at all the ten debate topics outlined in the V. Müller report, only a few could explain this general insecurity around AVs (autonomous vehicles). After, besides a few corner-cases of morality (for example, the famous trolley problem), AVs are supposed to be designed to follow traffic rules, which intrinsically have very few ‘grey areas’. One debate topic, however, appears as a logical explanation — the opacity of AI systems. ^[2] Here, it is explained that the AI systems behind AVs are generally invisible to both the user and the programmer. It is therefore difficult to trust a ‘black-box’ system to take charge of moving heavy machinery that could endanger human life. The antidote to this distrust seems to be multifaceted, however two major facets are better statistics on the safety of AVs, and technical education of the public.

Suspendisse vel felis. Ut lorem lorem, interdum eu, tincidunt sit amet, laoreet vitae, arcu.

Aenean faucibus pede eu ante. Praesent enim elit, rutrum at, molestie non, nonummy vel, nisl. Ut lectus eros, malesuada sit amet, fermentum eu, sodales cursus, magna. Donec eu purus. Quisque vehicula, urna sed ultricies auctor, pede lorem egestas dui, et convallis elit erat sed nulla. Donec luctus. Curabitur et nunc. Aliquam dolor odio, commodo pretium, ultricies non, pharetra in, velit. Integer arcu est, nonummy in, fermentum faucibus, egestas vel, odio.

Sed commodo posuere pede. Mauris ut est. Ut quis purus. Sed ac odio. Sed vehicula hendrerit sem. Duis non odio. Morbi ut dui. Sed accumsan risus eget odio. In hac habitasse platea dictumst. Pellentesque non elit. Fusce sed justo eu urna porta tincidunt. Mauris felis odio, sollicitudin sed, volutpat a, ornare ac, erat. Morbi quis dolor. Donec pellentesque, erat ac sagittis semper, nunc dui lobortis purus, quis congue purus metus ultricies tellus. Proin et quam. Class aptent taciti sociosqu ad litora torquent per conubia nostra, per inceptos hymenaeos. Praesent sapien turpis, fermentum vel, eleifend faucibus, vehicula eu, lacus.

Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Donec odio elit, dictum in, hendrerit sit amet, egestas sed, leo. Praesent feugiat sapien aliquet odio. Integer vitae justo. Aliquam vestibulum fringilla lorem. Sed neque lectus, consectetur at, consectetur sed, eleifend ac, lectus. Nulla facilisi. Pellentesque eget lectus. Proin eu metus. Sed porttitor. In hac habitasse platea dictumst. Suspendisse eu lectus. Ut mi mi, lacinia sit amet, placerat et, mollis vitae, dui. Sed ante tellus, tristique ut, iaculis eu, malesuada ac, dui. Mauris nibh leo, facilisis non, adipiscing quis, ultrices a, dui.

Morbi luctus, wisi viverra faucibus pretium, nibh est placerat odio, nec commodo wisi enim eget quam. Quisque libero justo, consectetur a, feugiat vitae, porttitor eu, libero. Suspendisse sed mauris vitae elit sollicitudin malesuada. Maecenas ultricies eros sit amet ante. Ut venenatis velit. Maecenas sed mi eget dui varius euismod. Phasellus aliquet volutpat odio. Vestibulum ante ipsum primis in faucibus orci luctus et ultrices posuere cubilia Curae; Pellentesque sit amet pede ac sem eleifend consectetur. Nullam elementum, urna vel imperdiet sodales, elit ipsum pharetra ligula, ac pretium ante justo a nulla. Curabitur tristique arcu eu metus. Vestibulum lectus. Proin mauris. Proin eu nunc eu urna hendrerit faucibus. Aliquam auctor, pede consequat laoreet varius, eros tellus scelerisque quam, pellentesque hendrerit ipsum dolor sed augue. Nulla nec lacus.

Suspendisse vitae elit. Aliquam arcu neque, ornare in, ullamcorper quis, commodo eu, libero. Fusce sagittis erat at erat tristique mollis. Maecenas sapien libero, molestie et, lobortis in, sodales eget, dui. Morbi ultrices rutrum lorem. Nam elementum ullamcorper leo. Morbi dui. Aliquam sagittis. Nunc placerat. Pellentesque tristique sodales est. Maecenas imperdiet lacinia velit. Cras non urna. Morbi eros pede, suscipit ac, varius vel, egestas non, eros. Praesent malesuada, diam id pretium elementum, eros sem dictum tortor, vel consectetur odio sem sed wisi.

References

- [1] On-Road Automated Driving (ORAD) Committee. *Taxonomy and Definitions for Terms Related to Driving Automation Systems for On-Road Motor Vehicles*, April 2021.
- [2] Vincent C. Müller. Ethics of Artificial Intelligence and Robotics. In Edward N. Zalta, editor, *The Stanford Encyclopedia of Philosophy*. Metaphysics Research Lab, Stanford University, Summer 2021 edition, 2021.
- [3] Policygenius. Self-driving cars make 76% of americans feel less safe on the road. <https://www.policygenius.com/auto-insurance/self-driving-cars-survey-2022/>, September 2022. Accessed: 2022-11-18.
- [4] Synopsys. Autonomous driving levels. <https://www.synopsys.com/automotive/autonomous-driving-levels.html>. Accessed: 2022-11-18.