

Literature's Use in Predicting Psychological Outcomes from Technological Advances

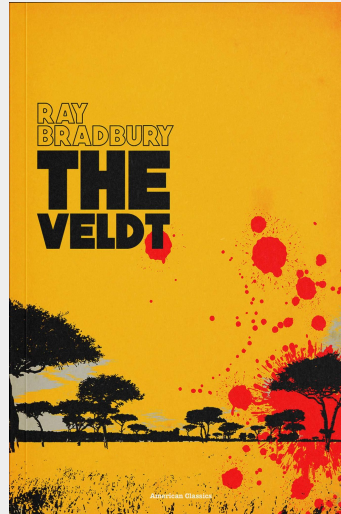
Paul G. Schultz

Introduction

The use of Advanced Driver Assistance Systems (ADAS) has become commonplace. Lane centering, adaptive cruise control, forward collision warning, these are all systems that reduce both the frequency and severity of crashes and are used regularly by millions of people. However, these systems come with their own unique risks and dangers. Individuals are more likely to become distracted and inattentive to the road while using ADAS. This behavior of overreliance and complacency because of technology is addressed in Ray Bradbury's 1950 short story "The Veldt." In this narrative, Bradbury imagines a future where technology does everything in the household. Machines take care of everything from cooking to clothing people. Yet, Bradbury uses this seemingly utopian world to highlight the dangers of over-relying on technology.

Analysis

While Bradbury uses the house to convey how technology has improved, he simultaneously uses it to symbolize a constant relationship between humanity and technology: convenience and overreliance. People innovate to make life easier. The wheel moves goods around, the typewriter industrialized writing, and the internet revolutionized communication across the world. Humanity continuously delegates hard work to machines. In Bradbury's story, this premise has been brought to its logical extreme. The house "clothed and fed and rocked them to sleep and played and sang and was good to them." Their son didn't even have to tie his own shoes. In a future where technology does everything, humanity's desire to rely on technology is the same. But the desire for convenience, as Bradbury shows, comes with the fact of overdependence. The family is so reliant upon the house that they would "go hungry tomorrow if something went wrong in [their] kitchen." George uses the nursery as a substitute for interacting with his children for so long the psychologist explains how "you've let this room and this house replace you and your wife in your children's feelings. This room is far more important in their lives than their real parents." Bradbury shows how the nursery was an incredible device and created an exceptionally comfortable life for the family, but it came at the cost of the children's psychological development. The innovations enabled the family to create a seemingly comfortable life. Yet, because of the constant complacency, this formula evaluates to a negative outcome.



Summary

The short story follows Mr. and Mrs. Hadley and their two children. They live in a "HappyLife Home," the amalgamation of all the technological advances humanity has achieved. The house was the family's sole caretaker, and it "clothed and fed and rocked them to sleep and played and sang and was good to them." The highlight of the house was the virtual reality box, called the nursery, that could come up with anything the two children could come up with. George Hadley is content to sit back and let the children reign free in the nursery, going as far as to let the children "play as [they] wished." However, recently the room had been stuck on a pattern of an African veldt. Mr. Hadley recounts that "at a distance, for the past month, he had noticed [the veldt]. But, being busy, he had paid it no attention." But after a month of hearing screams from the nursery, Mrs. Hadley asks her husband to look at the room. George, noticing the distinct atmosphere of death, decides to shut off the room, but almost instantly folds when his children protest, telling them to "go play in Africa." After being convinced by a psychologist that the room was causing a feedback loop of hatred, George makes the decision to shut off the house entirely and go on a family vacation. But again, he folds after the children throw a tantrum, and he concedes to "another moment of nursery" so the children would "just shut up." The story ends with the children tricking their parents into the nursery, locking them inside, and letting the lions of the African veldt maul Mr. and Mrs. Hadley.

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Application

Reading this literary work and analyzing its message made me think about the different technologies that have the worst outcome from these two combined human traits. This led me to a research question: **does assistive driving technology improve or worsen safety conditions on the road, and how so?** As ADAS continues to permeate the car market, this question is becoming increasingly relevant. If this technology leads to increased safety on the roads, all efforts should be made to progress toward full market permeation. However, if these technologies are destructive, they should be reevaluated and designed in a way that the same negative effects cannot occur.

Research

Driver distraction and inattention to the road is a very real effect of assistive technology. The findings of researchers Li Pingfei and Li Ruiwei both show how ADAS can induce distraction in drivers. In his article, Pingfei describes how drivers will enter a “passive monitoring state (‘passive vigilance’) and [gain] a diminished willingness to actively observe the road” (Pingfei 2). In Ruiwei’s article, drivers are reported to “often engage in non-driving-related tasks, leading to diminished situational awareness.

Additionally, as Ruiwei notes, “simulator-based investigations have observed that as user trust in automated systems grows, individuals are more inclined to perform secondary tasks and simultaneously exhibit poorer takeover performance” (2). Furthermore, “simulator-based experiments have found that after every ten minutes of uninterrupted system operation, driver attentiveness declines by roughly 16%, while reaction time to intervention requests increases by about 0.8s” (Ruiwei 3).

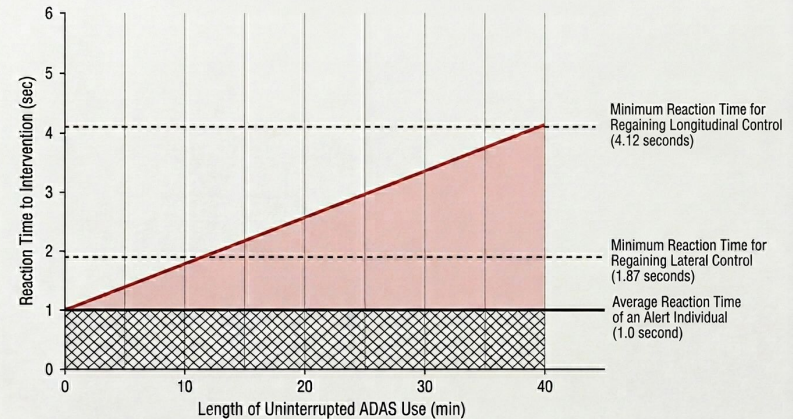
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According to Pingfei’s research, the minimum reaction time of a driver to safely takeover a vehicle from a takeover prompt is 4.12s for longitudinal control and 1.87s for lateral control (1). In just over ten minutes of uninterrupted ADAS use the driver will, on average, be unable to effectively react to a lateral control request. Additionally, Ruiwei states how if engaged in a “non-driving-related” task, a driver’s emergency reaction time could be “2 to 8s longer than conventional manual driving.”

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Findings and Insights

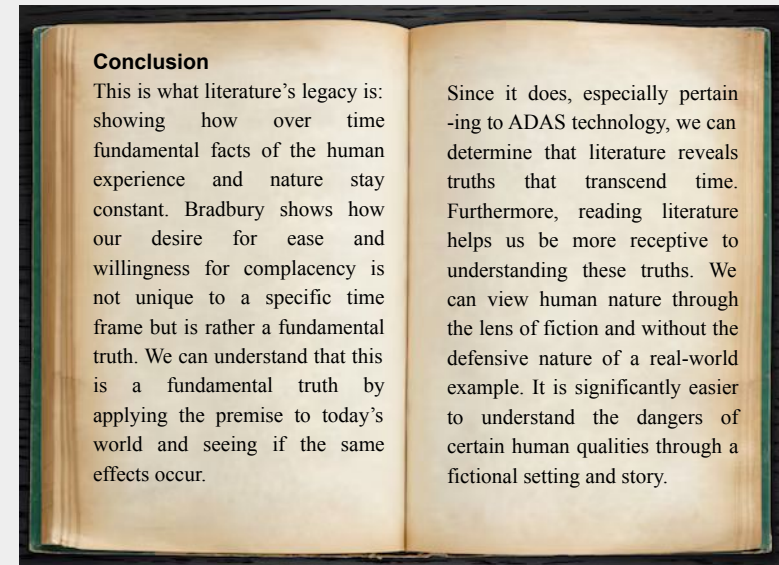
These findings corroborate the idea that this technology can significantly improve safety conditions, but only when used correctly. When used improperly through overreliance or complacency, there can be fatal consequences. This is the relationship we see in "The Vedlt."

George trusted and overrelied upon the nursery and assumed that it could entertain and babysit his children in all cases. How Bradbury outlines this relationship can be applied to how people treat assistive technology today.

People often trust that ADAS can deal with situations that they cannot deal with which leads them into precarious and deadly scenarios. A parallel can be found in the idea of minimum reaction time between the text and this issue. George had let his children stew in their rage and hatred for hours every day for a month, and eventually he passed the point of no return. Similarly, if a driver is distracted past a certain minimum reaction time, the driver will not be able to deal with the issue and a crash will occur.

Reflection

Reading this text gave me a unique understanding of how to approach ADAS technology. Without it, I would be trusting companies' statements that the negative effects of assistive driving technologies could fall to 0%. This text gave me the understanding of how, despite the level and type of technology is different, the human tendency to overrely on technology is the same. Reading the sources has led me to truly understand ADAS in this context and has also shown the dangers of ADAS technology. However, they have also shown me that overall, and especially if used properly, ADAS can significantly improve safety conditions on the road.



Conclusion

This is what literature's legacy is: showing how over time fundamental facts of the human experience and nature stay constant. Bradbury shows how our desire for ease and willingness for complacency is not unique to a specific time frame but is rather a fundamental truth. We can understand that this is a fundamental truth by applying the premise to today's world and seeing if the same effects occur.

Since it does, especially pertain-ing to ADAS technology, we can determine that literature reveals truths that transcend time. Furthermore, reading literature helps us be more receptive to understanding these truths. We can view human nature through the lens of fiction and without the defensive nature of a real-world example. It is significantly easier to understand the dangers of certain human qualities through a fictional setting and story.

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