Analyzing the Ethics of Artificial Intelligence within Modern Applications

Jonathan Yeung

Artificial intelligence has seen significant growth over the past few years thanks to advances in deep learning neural networks and continual increases in computational power. Over the past decade, we have seen the proliferation of artificial intelligence from mere enemies in video games to its use in machine learning to teach itself things or generate entirely new images from keywords. However, such developments also carry risks and unforeseen consequences through potential misuse by bad actors and encounters in real-life situations that bring such technology into question. Rapid development in the field has led to a lack of regulations surrounding artificial intelligence and discussions regarding what is legally and morally permissible are still at play and up to the discretion of the people using these technologies. The aim of this paper is to drive the discussion regarding the ethics of artificial intelligence through the analysis of its implementations and applications to outline potential areas of improvement and ensure a safer and morally ethical future. Such discussions would allow us to examine the use of artificial intelligence in our lives and outline its impact on the relevant stakeholders and ultimately argue whether or not such technologies are ethical in their application. Although companies are generally cautious with their use of artificial intelligence, issues still arise regarding specific ethical scenarios and gray areas regarding the training of models and the potential misuse of such technology that should be regulated through legislation.

Before analyzing modern applications of artificial intelligence we first need to define what it is. Artificial intelligence is the ability of a machine to make its own decisions when presented with a unique situation without the need for any human input. In a sense, it copies the ability of humans to perceive and react to information. Artificial intelligence has been around for a while and can be applied in many contexts, from the computer-controlled enemies in a video game to the systems that power smart virtual assistants such as Siri or Google Assistant. It

involves disciplines such as machine learning which can incorporate neural networks to mimic the brain to learn and train itself more efficiently just as a human would. Subsequently, recent advancements have extended its scope significantly and placed it in more ethically-challenging situations such as in self-driving cars or for transplanting new faces onto existing ones.

One common application of artificial intelligence is in self-driving cars. A notable example is with Tesla Autopilot which enables vehicles to travel on freeways without active human control through the use of cameras and sensors. In October 2020, Tesla started a beta testing program for 'Full Self-Driving' which allowed owners to use the self-driving technology in urban environments but notes that drivers still need to be ready to regain control due to the unfinished nature of the software. This is detected through sensors in the steering wheel to ensure the driver's hands remain on the wheel during operation.

On the one hand, Tesla's implementation is ethically right because they recognize that their self-driving technology may not be perfect and could require driver intervention which they enforce through steering wheel sensors to prevent misuse. However, testing unfinished self-driving software on public roads raises ethical concerns because it is prone to making errors that put the driver's and other people's lives at risk, which Tesla knowingly enables by allowing users to test the software on their vehicles. For example, Tesla was forced to recall all 363,000 vehicles equipped with their self-driving software on February 16 2023 because an investigation conducted by the National Highway Traffic Safety Administration found that it was prone to breaking traffic laws and "could cause crashes".[1] Additionally, Tesla only offers Full Self-Driving as a paid option that initially cost $6,000 but was subject to price increases over

[1] Kolodny, Lora. "Tesla Recalls 362,758 Vehicles, Says Full Self-Driving Beta Software May Cause Crashes." CNBC, CNBC, 16 Feb. 2023, https://www.cnbc.com/2023/02/16/tesla-recalls-362758-vehicles-says-full-self-driving-beta-software-may-cause-crashes.html.

time to encourage people to specify the option, and now costs an additional $15,000 over the price of the standard car.[2] It can be argued that it is morally wrong to charge users money for them to test unfinished technology that puts their own and other people's lives at risk. Furthermore, the subsequent price increases can also be seen as entrapment that forces people to specify the option to maintain the residual values of their vehicles but also puts their lives at risk.

It also raises the question of consent because the increased risk of using Full Self-Driving was something that other road users did not consent to because they never accepted to be test subjects for the beta self-driving software. Such concerns are warranted with at least 19 confirmed fatalities attributable to Tesla Autopilot.[3] Furthermore, in a more local and recent example, a vehicle using Autopilot cut across multiple lanes and then abruptly slowed down to a complete stop on the Bay Bridge over Thanksgiving resulting in a multi-car pileup and multiple injuries including to a 2-year-old baby.[4] In this case, the self-driving technology caused an accident that would not have occurred if the driver was not using the technology and resulted in an accident that involved road users who did not consent to be part of the software testing. In this case, ethical questions arise with Tesla's implementation of the software and once again bring into question whether or not they should be allowed to test such software on public roads if it puts other road users at risk.

---

[2] Templeton, Brad. "Tesla Raises 'FSD' Price to $15k. Does It Signal They Are Giving up?" Forbes, Forbes Magazine, 2 Sept. 2022, https://www.forbes.com/sites/bradtempleton/2022/08/31/tesla-raises-fsd-price-to-15k--does-it-signal-they-are-giving-up/?sh=3826204d313c.

[3] Person, and David Shepardson. "Tesla Reports Two New Fatal Crashes Involving Driver Assistance Systems." Reuters, Thomson Reuters, 16 Nov. 2022, https://www.reuters.com/business/autos-transportation/tesla-reports-two-new-fatal-crashes-involving-driver-assistance-systems-2022-11-16.

[4] Klippenstein, Ken. "Exclusive: Surveillance Footage of Tesla Crash on SF's Bay Bridge Hours after Elon Musk Announces 'Self-Driving' Feature." The Intercept, The Intercept, 10 Jan. 2023, https://theintercept.com/2023/01/10/tesla-crash-footage-autopilot/.

Another ethical consideration surrounds Tesla's marketing of Autopilot. Despite calling it autopilot, it is only classified as a Level 2 self-driving vehicle meaning that the driver still needs to pay attention to the road in case they have to intervene at any moment. It is also far from the Level 5 version of self-driving in which no driver intervention is needed whatsoever. However, this hasn't stopped users from easily bypassing Tesla's steering wheel sensors to misuse the technology to sleep or watch movies at the wheel.[5] Additionally, a promotional video created by Tesla to demonstrate self-driving capabilities was found to have been heavily prepared and the vehicle also experienced a collision during filming that was not shown. As such, serious ethical complications arise surrounding Tesla's misleading presentation of autopilot as a fully autonomous system and how it has encouraged dangerous behavior for its users. Although it could be argued that Tesla shouldn't have to bear the ethical responsibility for a small subset of users of misuse the technology, many other automakers that also offer Level 2 self-driving capabilities market it under names that still puts the responsibility on the user such as Mercedes 'DRIVE PILOT' or BMW 'Driving Assistant Professional'. Furthermore, other automakers also include eye-tracking cameras to ensure that the user is paying attention to the road to prevent misuse.

However, the discussion surrounding the ethics of self-driving software gets more complicated as Tesla argues that self-driving vehicles are safer for society because 94% of fatal road accidents are caused by human error, according to the National Highway and Safety Administration.[6] As such, it could be argued through the utilitarian theory that the testing and use of self-driving software on public roads is ethically justifiable because the small number of

---

[5] Boudette, Neal E. "Tesla Says Autopilot Makes Its Cars Safer. Crash Victims Say It Kills." The New York Times, The New York Times, 5 July 2021, https://www.nytimes.com/2021/07/05/business/tesla-autopilot-lawsuits-safety.html.

[6] Automated Driving Systems: A Vision for Safety - NHTSA. https://www.nhtsa.gov/sites/nhtsa.gov/files/documents/13069a-ads2.0_090617_v9a_tag.pdf?ref=hackernoon.com.

incidents caused by Tesla Autopilot pales in comparison to the number of accidents regularly caused by human error. As such, using self-driving software would have a net positive benefit on society as the total number of accidents would theoretically be reduced as more people use self-driving technology.

In this case, while it is clear that there are ethical issues with Tesla's implementation of self-driving software, they aren't necessarily breaking any rules or legislation. On the one hand, Tesla is justified in using the utilitarian theory to argue that their self-driving technology is potentially safer and better for society, however, more data would also be needed to distinguish between the proportion of minor and major accidents involved with these vehicles. Tesla's use of the utilitarian theory also raises other questions such as how their software is designed to respond if they encounter the trolley problem, as covered in class. It is important to note that while Tesla is only one company of many that offer self-driving technology, their implementation of the technology makes for an interesting case study to observe the limitations of the technology when applied in an ethical and moral context. Additionally, such scrutiny is important because Tesla was the best-selling luxury brand in the U.S. in 2022 and saw a 41% increase in sales from the year prior.[7]

Another popular implementation of artificial intelligence is its use in deep fake technology. Deep fakes utilize deep learning to replace the faces of people in photos or videos and have also been used to create text-to-speech tools that can imitate a person's voice. Although modern deep fakes as we know it has been around for several years dating back to around the 2016 presidential election, further advancements in the field have made the technology even more accessible and convincing today.

---

[7] Stafford, Eric. "Tesla Was the Bestselling Luxury Brand in 2022." Car and Driver, Car and Driver, 17 Feb. 2023, https://www.caranddriver.com/news/a42938734/tesla-best-selling-luxury-brand-2022/.

One common use of deep fake technology is for imitating people who have died. For example, deep fake technology was used to impersonate Elvis Presley for America's Got Talent in which he performed a song alongside the judges of the show.[8] In this situation, ethical issues arise because it is debatable if Elvis Presley consented to his face being used for such a performance. Although it could be argued that Elvis Presley's estate could have given such permission, the question still remains of whether or not it is ethically correct because Elvis Presley could not have predicted that his likeness could be used in such a manner in the future. For the America's Got Talent performance, an Elvis Presley impersonator performed and his face was digitally replaced. In this case, it could be argued that using deep fake technology in this way is not as questionable because they are attempting to preserve and maintain his likeness but using modern technology to enhance immersion and make it applicable to the show. The use of an Elvis impersonator to mimic and subsequently preserve Elvis' likeness also makes it less ethically challenging than if they used a completely different person or used CGI that did not maintain his likeness. However, a potential counterargument to this method would also bring into question the ethics of celebrity impersonators and the morality of impersonating a dead celebrity. However, not all implementations in this situation are inherently questionable, and deep fakes can also be used in an ethical manner that doesn't question the consent of the person being impersonated. For example, deep fake technology was used during a segment on Jimmy Kimmel's 20th-anniversary show when he had a conversation with a younger version of himself from 2003.[9]

---

[8] Schwartz, Eric Hal. "Elvis Presley Resurrected for America's Got Talent by Metaphysic and Synthetic Voice Startup Respeecher." Voicebot.ai, 19 Sept. 2022, https://voicebot.ai/2022/09/14/elvis-presley-resurrected-for-americas-got-talent-by-metaphysic-and-synthetic-voice-startup-respeecher/.

[9] McEntyre, Nicholas. "Jimmy Kimmel Interviews Himself from 20 Years Ago as Late Show Celebrates Anniversary." New York Post, New York Post, 27 Jan. 2023, https://nypost.com/2023/01/27/jimmy-kimmel-interviews-younger-self-during-anniversary-show/.

Another implementation of deep fakes is its use in mimicking voices with a notable example being Google Duplex which was introduced back in May 2018.[10] Google Duplex was an extension of Google Assistant and could make phone calls to book a reservation at a restaurant or call a business to verify their store hours during holidays. It was capable of having full conversations with people and responding with no trouble as if the person calling was a human. Its purpose was to take the workload off the user, for example, they would only need to ask Google Assistant to make a reservation and Google Duplex would handle the rest and send a confirmation to the user. However, Google Duplex initially faced backlash due to the indistinguishable and convincing nature of its voice as it would imitate nuances in human speech and use casual language such as “um”, “mhm”, and “gotcha”.

In this case, it was argued that the use of such technology is unethical because people weren’t being informed that they were talking to a digital assistant and that the lack of transparency was deceitful. Google Duplex also brought up additional ethical concerns because it would record the conversations to allow it to analyze what was being said and respond accordingly. Additionally, user interactions with the assistant are also recorded and used to improve the Google Assistant algorithm. Such an implementation is ethically questionable because the person receiving a call from Google Duplex did not consent to have their conversation recorded even if it is for simply analyzing what is being said, because it isn’t clear where this data is being stored and whether or not it is retained. Additionally, although all voice assistants including Siri collect voice samples from their users, it can be argued that such a practice is still ethically questionable because its users did not consent to have their voices recorded in the first place and that such a practice should be opt-in instead of opt-out. However, a

[10] Tuesday, May 08, and AIHCIMachine LearningNatural Language UnderstandingSpeech RecognitionTTS. “Google Duplex: An AI System for Accomplishing Real-World Tasks over the Phone.” – Google AI Blog, https://ai.googleblog.com/2018/05/duplex-ai-system-for-natural-conversation.html.

potential counter-argument could be that such voice assistants could be considered free services bundled with our devices and that the fee for its use is the analysis of our interactions with it in order to improve its responses. Nonetheless, in response to the backlash, Google eventually made it such that Duplex would declare that the person talking was a robot at the beginning of the conversation.[11]

The use of deep fake technology to mimic a person's likeness visually and audibly does raise some ethical concerns. The use of deep fakes to impersonate a specific person highlights the importance of consent and whether or not such implementations are justified because they use a person's likeness for their own purposes. For example, if the person being impersonated is doing something inappropriate or offensive then the responsibility falls onto the person being deep faked because people will assume it is real. This issue is further complicated if the person is no longer alive and how they are supposed to provide proper informed consent when they had no idea that their face could be used in such an advanced application. The highly convincing nature of deep fakes also poses concerns over its use in the future and how similar applications could be used nefariously or with the sole purpose to deceive people who think they're talking to a real human without them knowing, for example with robocalls.

In conclusion, artificial intelligence has come a long way and has seen significant progress and development even in the past few years. However, while the technology is no doubt impressive, it is clear that there is a lack of rules and regulations to ensure that it is being used in an appropriate and ethical manner. For example, the use of artificial intelligence in self-driving vehicles would reduce the number of accidents on the road compared to human drivers. But in the case of Tesla Autopilot, questions arise regarding the development of the software and the

[11] Welch, Chris. "Google Is Being Vague with Disclosure in Early Real-World Duplex Calls." The Verge, The Verge, 26 Nov. 2018, https://www.theverge.com/2018/11/26/18112807/google-duplex-robot-calls-restaurants-businesses-transparency.

tactics they use to market and test it on public roads. Similarly, the use of deep fake technology to bring back celebrities or to automate existing processes to save time is also impressive. However, ideas regarding consent and how we go about actually automating such processes in an ethical manner aren't as clear. As such, more standardized and clear-cut guidelines in the form of laws and legislations should be passed and would go a long way in ensuring that the use of artificial intelligence can remain as safe and ethical as possible.