abstract

Autonomous vehicle (AV) also known as self-driving car or driver-less vehicle technology promises to be the game changer for the transportation industry. This technology promises to drastically reduce the number of traffic fatalities due to human errors. Additionally, there will be an increase in mobility of children, the elderly and the sick among other desirable benefits. This explains why almost all major automobile makers in the industry are investing tons of money to advance this technology. However, road driving at any reasonable speed involves some risks. Therefore, even with the high-tech autonomous vehicle algorithms and sophisticated sensors, there may be unavoidable crashes due to imperfection of systems, or when wildlife, children and other pedestrians suddenly run into the road. Whenever there is a risk involved, there is the need for an ethical decision to be made. (Goodall, 2014). One may argue that the vehicle needs to just avoid the risk at all cost, but this is not an easy task to do since its environment is totally unpredictable. While ethical and moral decision making in humans have long been studied by experts, the advent of artificial intelligence (AI) also calls for machine ethics. To study the different moral and ethical decision making in humans, experts may use the Trolley Problem (Baram, 2019), which is a scenario where one must pull a switch near a trolley track to redirect the trolley to kill one person on the track or do nothing which will kill five people if no decision is made. Although it is important to take the input of people in the society and perform a study to understand how humans crash during unavoidable accidents to help program morals and ethical decision making into self-driving cars, the classical trolley problem is not an ideal way to go about it as it is unrealistic and does not represent moral situations that people face in the real world. Therefore, this work seeks to modify and create realistic situations or dilemmas using an immersive virtual environment to study how different drivers crash during dilemmas.