Abstract

Purpose

The primary objective of this study is to meet the need for an easily accessible platform that encourages comprehension and discussion concerning the ethical implications associated with autonomous vehicles (AVs), particularly focusing on autonomous cars. AVs are vehicles outfitted with the technology to navigate autonomously without human intervention, using an array of sensors and machine learning algorithms. This project centers on the development of a full-stack, web-based tool designed to dynamically generate a broad array of ethical scenarios specifically related to autonomous cars. The ultimate aim of this tool is to aid informed decision-making among various stakeholders involved in the autonomous vehicle industry.

Originality

While extensive research exists on various facets of autonomous vehicles (AVs), including their security, this study uniquely focuses on the ethical dimensions, particularly concerning autonomous cars. On a theoretical level, the research delineates four key ethical components—'Transparency,' 'Accountability,' 'Effectiveness,' and 'Trust'—derived from established guidelines and prior scholarly work. In addition to its theoretical contributions, the study is original in its practical approach. Unlike prior research, this project has developed an interactive, web-based tool specifically designed to gather primary data on ethical decision-making in the context of autonomous cars. The tool generates scenarios that extend beyond theoretical examination, presenting practical, real-world ethical situations. This dual focus on theoretical and practical contributions offers a comprehensive investigation into the ethical complexities of autonomous cars, fulfilling a notable gap in the academic domain.

Methodology

The study initiates with an exhaustive review of existing literature, focusing on ethical design principles as they relate to autonomous cars, with a particular emphasis on 'Accountability' and 'Trust.' Building on this foundation, a full-stack web-based tool is developed to gather primary data on ethical considerations in autonomous cars. Participants are categorized into two ethical groups based on their responses to a screening question:

- Functional: Participants who emphasize practical, utilitarian outcomes in ethical decision-making.
- Moral: Participants who prioritize ethical or moral principles when making decisions.

After categorization, participants are exposed to specific ethical dilemmas generated dynamically by the tool. Data collection is facilitated using a combination of five-point Likert scale items, two-point Likert scale items, and scenario-based inquiries. The methodology is geared towards facilitating informed ethical decision-making among various stakeholders, thereby contributing to the broader discourse on the ethical aspects of autonomous vehicle technology.