What if Automated Vehicles Became AUTONOMOUS? A Critical Perspective

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While the literature often does not discern between autonomous, automated, or highly automated vehicles, there is an important distinction to be made: truly autonomous vehicles could act on their own behalf, circumventing or ignoring the wishes of their owners. With this video, we want to stimulate discussions on how such autonomous vehicles could impact our lives positively, negatively, and ambiguously. We do not promote such autonomous vehicles but rather explore this possibility.

CCS Concepts: • **Human-centered computing** → **HCI design and evaluation methods**; **HCI theory, concepts and models**.

Additional Key Words and Phrases: video prototyping; autonomous vehicle; automated vehicle; critiquing; mobility; automated traffic

1 INTRODUCTION

> *A fully autonomous car would be self-aware and capable of making its **own** choices. For example, you say "drive me to work" but the car decides to take you to the beach instead.*[1]

According to the Collins dictionary, "Autonomy is the ability to make your own decisions about what to do rather than being influenced by someone else or told what to do"[2]. With the aforementioned quote from synopsys.com, this autonomy could also be applied to vehicles of the future. Already, people expect that traffic will alter significantly with the rise of automation. Challenges associated with the rise of automation have already been discussed in the literature. As early as 1986, Bainbridge [1] introduced the ironies of automation, stating that as automation in a system increases, situation awareness of human operators decreases. Similar challenges refer to AI-based autonomy [7]. As autonomous systems continue to evolve, they also have the potential to evolve in unexpected ways [15]. Consequently, autonomous vehicles – as fully autonomous systems – could make decisions on their own that may or may not be in the owner's or society's favor.

This notion of autonomy contradicts the current use of the word in the literature, where autonomous and automated are often used interchangeably [3–6, 8–11, 13].

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[1]https://www.synopsys.com/automotive/what-is-autonomous-car.html; Accessed: 07.05.2023
[2]https://www.collinsdictionary.com/de/worterbuch/englisch/autonomy; Accessed: 07.05.2023

In the 2023 Post-CHI Summer School on Automotive User Interfaces and Future Mobility, we envisioned numerous scenarios to explore the possibility of **AUTONOMOUS** vehicles.
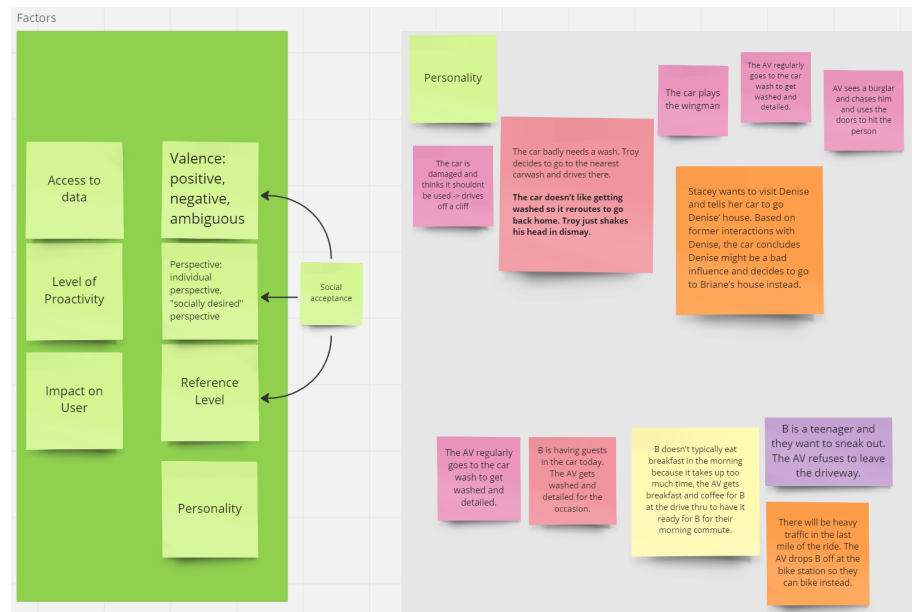

Fig. 1. Relevant Factors and Personality aspects

Fig. 2. Access to data

Fig. 3. Level of Proactivity

2 METHODOLOGY

First, we leveraged miro.com to gather a diverse set of ideas (>30) for possible scenarios. No limitations on context, capabilities, or legal boundaries were given (see Figure 1, Figure 2, and Figure 3). Video Prototyping, a widely accepted method in the field of Human-Computer Interaction, offers numerous advantages, including the straightforward implementation of otherwise challenging interaction paradigms or contexts. This method is essential for facilitating exploring radical innovations, as it allows for the observation of impacts and the establishment of a common foundation for discourse on human-machine interfaces [12, 14]. Although video prototyping is typically associated with solution-oriented approaches, we employed this technique to foster critical analysis of diverse scenarios (see also Bernhaupt et al. [2]). Presented in an engaging manner, our videos are designed to emphasize potential challenges without implying that the fundamental objectives of the scenarios are undesirable. Instead, they encourage the exploration of various perspectives.

3 PERSPECTIVES ON AUTONOMOUS VEHICLES

In the video, we pose the question of what impact *AUTONOMOUS* vehicles could have on various users. We highlight three fields, each with a short video in the style of the popular TV show "The Office":

(1) Autonomous vehicles listen to every conversation and, thus, are able to fulfill your needs

(2) Autonomous vehicles act as law enforcement by surveilling their surroundings

(3) Autonomous vehicles deciding who you should be friends with, thereby ignoring your wishes but potentially fulfilling the wishes of others (or society)

This video should spark discussion within the AutoUI community to assess broad questions about the advances in automation.

ACKNOWLEDGMENTS

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