

Ethical and Privacy Concerns in Artificial Intelligence Dialogue Systems: Do Students in Higher Education Really Care About Them?

Chunpeng ZHAI*, Santoso WIBOWO & Lily D. LI
School of Engineering and Technology, CQUniversity, Australia
*c.zhai@cqu.edu.au

Abstract: This work-in-progress paper investigates on whether students in higher education really care about the ethical and privacy concerns in the use of artificial intelligence (AI) dialogue systems. Based on semi-structured interviews of 37 undergraduate students, this study uncovered a variety of viewpoints. The study found that despite their awareness of ethical and privacy concerns in the use of AI dialogue systems, the majority of students did not put much effort in addressing these issues. Around 75% of the students prioritized efficient and effective university assignment completion with the help of AI dialogue systems over these ethical and privacy concerns. The study also revealed that cultural differences influenced students' attitudes towards ethical and privacy concerns. Specifically, students from high-context cultures, where a significant portion of communication relies on shared experiences, implicit cues, and non-verbal elements, showed less concern compared to those from low-context cultures, where their communication relies heavily on explicit messages, direct language, and precise information. This study recommends several strategies to address privacy and ethical concerns, including the development of comprehensive data management policies, the use of data anonymization and minimization techniques, and the enforcement of stringent security measures to prevent data breaches.

Keywords: Dialogue systems; higher education; ethical concerns; privacy, students

1. Introduction

Artificial intelligence (AI) dialogue systems, also known as conversational agents or chatbots, are software mechanisms that mimic human dialogue. These systems have been integrated with various sectors, such as e-commerce, healthcare, finance, and notably, education (Adamopoulou & Moussiades, 2020). Their use in academia has recently gained significant attention, promising to transform pedagogical practices and student learning (Zhai & Wibowo, 2023). AI dialogue systems offer various advantages, such as automating tasks, aiding in data analysis, and fostering innovative learning and evaluation methods (Song & Xiong, 2021). This allows for more effective learning, empowering students to better understand complex and creative information (Zhai & Wibowo, 2023). Additionally, these systems can simplify online learning, extending educational opportunities to students in remote locations, thus promoting a more equitable and inclusive educational landscape (Bhat et al., 2023). Despite these benefits, there are significant concerns associated with using AI dialogue systems in academia, primarily ethical issues and privacy concerns (Song & Xiong, 2021). Given that AI systems can potentially introduce bias and discrimination in educational settings, and even with safeguards like blockchain technology and end-to-end encryption, users might still face threats like malicious input, profiling, contextual attacks, and data breaches (Adamopoulou & Moussiades, 2020). This underscores the importance of conducting in-depth research into the ethical and privacy concerns of AI dialogue systems in education (Zhai & Wibowo, 2023). In this work-in-progress paper, a case study was conducted to better understand these privacy

and ethical concerns and outline potential strategies for dealing with these concerns. This study attempts to answer the following research questions:

- 1) What are the privacy and ethical concerns associated with the use of AI dialogue systems in higher education?
- 2) Do students care and act accordingly to ethical and privacy concerns in the use of AI dialogue systems in higher education?

2. METHOD

This study aims to better understand the privacy and ethical concerns in the use of MACHE-Bot, an AI dialogue system developed by Zhai and Wibowo (2023), for facilitating students in higher education with personalized, just-in-time feedback or assistance in their learning process. The acronyms of MACHE-Bot stand for multidimensional approach encompassing culture, humor, and empathy, which is culturally sensitive dialogue system, uniquely designed to engage users through humor and empathetic interactions. A total of 37 university students from various ages, genders, and cultural backgrounds were selected from a university in Queensland, Australia. The students interacted with the MACHE-Bot for a period of two weeks, which was followed by a semi-structured interview. These interviews were used to gather insights on students' experiences, attitudes, and understanding of the system, aspects which are hard to capture using quantitative methods. The participants' feedback was subsequently analyzed via NVivo Transcription and a three-tiered coding system, a structured approach to analyzing qualitative data, revealing key themes about their experiences and perceptions, particularly towards the ethical and privacy concerns related to the use of AI dialogue systems.

3. PRELIMINARY FINDINGS AND DISCUSSIONS

- 1) What are the privacy and ethical concerns associated with the use of AI dialogue systems in higher education?

Privacy concerns associated with AI dialogue systems in the education sector are crucial for safeguarding the integrity and confidentiality of data. Based on the study, these concerns include data privacy and ethical implications. Data privacy is a significant concern as AI dialogue systems often require access to personal information and conversations. This raises questions about how data is stored, used, and protected. Unauthorized access or data breaches could result in privacy violations and potential misuse of sensitive educational information (Song & Xiong, 2021). Additionally, biases and discrimination pose concerns in AI dialogue systems. These systems can inherit biases from training data, potentially resulting in discriminatory or unfair outcomes. In the education sector, where equal opportunities and inclusivity are paramount, higher education institutions must address biases and ensure fairness. Institutions must establish protocols to ensure proper data handling, secure storage, and compliance with privacy regulations to protect student and user data (Adamopoulou & Moussiades, 2020). Ethical implications of data usage, participants believe that higher education institutions should consider the ethical implications of collecting and analyzing data through AI dialogue systems. Transparency in data collection practices, ensuring informed consent from participants, and responsible handling of data are crucial elements to ensure ethical practices (Song & Xiong, 2021). Figure 1 illustrates the variety of ethical and privacy issues related to the use of AI dialogue systems in higher education.

- 2) Do students care and act accordingly to ethical and privacy concerns in the use of AI dialogue systems in higher education?

The research findings show that while students demonstrated an awareness of these concerns, most of them did not show significant action to address these issues. Around 75% of the students indicated that their primary objective was to complete assignments effectively and efficiently, regardless of ethical and privacy issues surrounding AI usage. Participant 11

states that "we know the ethical issues, but honestly, I never really thought about how I could actively avoid ethical problems in my study, I mean, my university assignment. Completing assignments effectively is important to me." Furthermore, there was an interesting cultural distinction, with students from high-context cultures appearing to be less concerned about these issues compared to those from low-context cultures. Participants perceived these issues as secondary to academic success and considered paraphrasing and citation to be sufficient to avoid any potential ethical infringements (Song & Xiong, 2021). For example, participant 8 stated that "I am from China, in our culture, getting high marks and study in good university, is the only option, we rarely think about ethical or privacy issues." And Participant 30 said that "in India, we have rote learning, and compete each other in study to get to the top position, using others' data and ideas that is normal in our culture." This might be attributed to the emphasis these cultures place on achievement and competition, leading students to sideline issues they perceive as less directly linked to their academic success (Zhai & Wibowo, 2023).

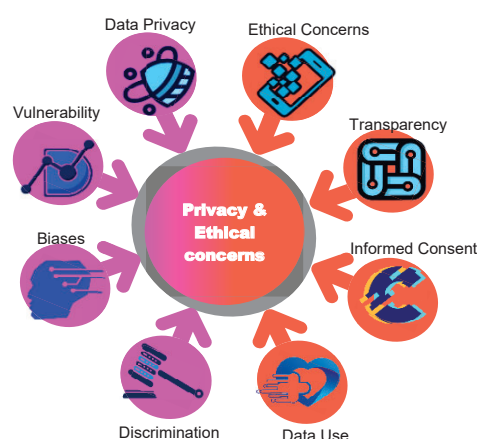


FIGURE 1. Ethical and privacy concerns associated with the application of AI dialogue systems in higher education

4. EXPECTED CONTRIBUTION AND FUTURE WORK

This work-in-progress paper examines on whether students in higher education really care about ethical and privacy concerns in the use of AI dialogue systems. A total of 37 undergraduate students was interviewed on the ethical and privacy concerns in the use of AI dialogue systems. The study found that the majority of students are aware of ethical and privacy concerns in the use of AI dialogue systems. However, they did not put much effort in addressing these issues. To fully leverage AI's potential in education and research, it is critical for educators and researchers to scrutinize the ethical and privacy consequences of AI dialogue systems, promoting their responsible and transparent usage. To expand on these findings and gain a more comprehensive understanding, further research will be conducted using a mixed-method approach which will enable the incorporation of both quantitative and qualitative data collection methods, providing a more holistic view of the effectiveness and implications of AI dialogue systems in education.

References

- Adamopoulou, E., & Moussiades, L. (2020). An overview of chatbot technology. IFIP international conference on artificial intelligence applications and innovations,
- Bhat, J. R., AlQahtani, S. A., & Nekovee, M. (2023). FinTech enablers, use cases, and role of future internet of things. *Journal of King Saud University-Computer and Information Sciences*, 35(1), 87-101. <https://doi.org/10.1016/j.jksuci.2022.08.033>
- Song, X., & Xiong, T. (2021). A survey of published literature on conversational artificial intelligence. 2021 7th International Conference on Information Management (ICIM),
- Zhai, C., & Wibowo, S. (2023). A WGAN-based dialogue system for embedding humor, empathy, and cultural aspects in education. *IEEE access*. <https://doi.org/10.1109/ACCESS.2023.3294966>