The Impact of Education Level on AI Reliance, Habit Formation, and Usage

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***Abstract*— This study examines the relationship between education level and various aspects of AI technology adoption. Findings indicate that individuals with higher education exhibit significantly greater reliance on AI-powered recommendations, while other AI functionalities (e.g., prediction, assistance) showed minimal links to educational background. The results suggest that while higher education may promote greater trust and openness to specific AI features, broader AI literacy initiatives are needed to ensure equitable adoption and minimize potential divides. These findings highlight the importance of inclusive AI design and targeted educational interventions to bridge the potential gap in AI usage based on educational disparities.**

Keywords: AI Adoption, Habit formation, Technology Acceptance, Education

I. Introduction

Artificial Artificial intelligence (AI) is transforming daily life, offering innovative solutions for varied tasks. However, widespread AI adoption depends not only on technical capabilities but also on human factors like user acceptance and habit formation [1]. Education plays a significant role in shaping how individuals interact with AI, impacting both initial acceptance and long-term use.

Education provides the technical skills needed to use AI tools effectively and fosters the critical thinking necessary for evaluating potential benefits, risks, and ethical considerations [4]. Those with higher education might exhibit a greater willingness to experiment and persevere with new AI features due to their comfort with technology and ability to assess potential value [3]. This open-minded approach can facilitate the transition from initial adoption of AI to regular, integrated use. Understanding the relationship between education level and AI adoption is crucial for promoting equity. Research suggests those with lower education levels might be less comfortable with AI, potentially missing out on benefits like personalized learning or productivity improvements [2]. If unaddressed, this could exacerbate existing skill gaps [6]. By studying the role of education in shaping AI perceptions and habits, we can design more inclusive AI systems and target educational interventions to address the needs of diverse user groups. This focus on inclusive design and tailored educational support can empower everyone to utilize AI confidently and effectively, regardless of their educational background.

The Technology Acceptance Model (TAM) and related frameworks emphasize the importance of perceived usefulness and ease of use in driving technology adoption [1]. These factors are likely influenced by education. Previous studies suggest those with higher education levels may have more prior experience with complex technologies, making AI tools seem more familiar and less intimidating. Additionally, education generally cultivates problem-solving skills that can translate well to navigating AI features. Habit formation theories (e.g., [33]) highlight the importance of repetition and reinforcement in solidifying new behaviours. Education can facilitate habit formation by fostering a strategic approach to technology and comfort with exploration, potentially leading to faster integration of AI tools into daily routines. This process can be further reinforced through positive experiences with AI-driven recommendations, predictions, and assistance. Together, acceptance and habit formation create a cycle enabling sustained, successful AI adoption for individuals across the educational spectrum.

While education plays a vital role, future research must acknowledge that it is not the sole determinant of AI usage patterns. A nuanced understanding of the complex interactions between formal education, informal learning experiences, and an individual's approach to technology is crucial for promoting broad and lasting AI adoption. While the link between education level and AI habit formation is emerging, the reasons behind this association remain unclear. This knowledge gap represents a significant barrier to designing AI systems and interventions that promote equitable AI adoption across diverse populations.

This study hypothesizes that individuals with higher education levels will demonstrate a greater tendency to form AI-related habits than those with lower education levels (H2). The core research question is:

> *Why do individuals with higher education levels exhibit greater reliance on AI, stronger habit formation, and higher AI integration?*

Potential explanations include increased exposure to advanced AI applications in academic or professional settings, greater trust in technology, and emphasis on problem-solving skills within higher education [34]. Investigating these factors will provide insights into potential solutions to bridge the gap in AI adoption. These solutions might include AI systems tailored to different user needs based on educational background, or targeted initiatives to increase AI exposure and enhance skills for those with lower education levels.

II. Background

The AI with its transformative potential across industries, is redefining modern society [1, 11]. Yet, the success of AI implementations depends on human acceptance, as both positive and negative perceptions of AI can shape adoption [2, 14, 16]. Education plays a pivotal role in shaping individuals' interactions with AI technologies [3]. It influences the technical skills, critical thinking abilities, and overall openness to technological advancements that are crucial for successful AI integration [4].

Formal education provides individuals with the foundational knowledge and technical skills necessary to

understand, navigate, and effectively utilize AI systems [5, 6, 17]. Beyond technical proficiency, it also fosters critical thinking and analytical skills. These allow for a more informed evaluation of AI's potential benefits and limitations [4, 7]. Through exposure to diverse technologies and ideas, education can promote an openness to innovation and a willingness to experiment [8]. Such an approach, fuelled by education, can lower the barriers to AI adoption.

Furthermore, educational experiences can directly influence an individual's risk tolerance when interacting with new technologies [5, 9]. Studies suggest that individuals with higher education levels might exhibit a greater willingness to embrace novel technologies and persevere through initial learning curves [9, 10]. This openness is likely due to several factors: the development of problem-solving skills during their educational journey, an appreciation for innovation cultivated by exposure to new ideas, and a greater confidence in their own ability to navigate unfamiliar domains.

Notably, education is not the sole determinant of AI acceptance. Individual-level factors such as personality traits and prior technology experience also play significant roles [11, 20]. These factors, however, can be influenced by an individual's educational experiences. For example, the concept of 'academic self-efficacy' or the belief in one's own ability to succeed in academic tasks [18] can translate into confidence in approaching new technologies. To ensure that AI applications are beneficial and accessible to all, it's crucial to understand how education shapes AI acceptance and habit formation. This requires examining both the impact of formal education and the influence of informal learning experiences that take place outside of the classroom [8]. Beyond initial acceptance of AI technologies, education plays a vital role in the formation of habits and long-term use patterns. Habit formation is a multi-stage process involving repetition, cues, and rewards [21]. Educational institutions can shape this process through repeated and structured exposure to AI tools and concepts across different contexts [22]. Moreover, as individuals with higher education levels might possess greater strategic thinking abilities, they can consciously integrate AI technologies into their routines, potentially leading to swifter habit formation.

Theoretical perspectives like the TAM offer a foundation for understanding how education influences AI adoption and habit development [23, 24, 25]. TAM posits that perceived usefulness and perceived ease of use are fundamental factors influencing users' intentions to embrace new technologies. Education, particularly specialized education in technical domains, can boost both perceived usefulness and perceived ease of use. Graduates likely emerge with a deeper understanding of AI capabilities and its potential applications, fostering a greater inclination to engage with AI [12]. While acceptance and habit formation share connections, they are distinct. Technology acceptance focuses more on initial willingness to use, while habit formation emphasizes sustained integration into daily life. Educational experiences that cultivate familiarity and positive interactions with AI might bridge the gap between acceptance and the development of AI-integrated habits by fostering ease of use and a sense of personal relevance [14, 15]. Understanding factors that promote habit formation is especially important in an era where AI systems are becoming increasingly sophisticated and embedded in everyday activities [12].

As AI pervades industries and everyday life, it's crucial to address potential disparities in access based on educational attainment. Those with lower levels of education might experience less exposure to AI and its applications [4]. Even when access is provided, a lack of foundational technical skills may hinder some individuals from fully engaging with these systems [8]. Limited understanding of AI could also fuel negative perceptions and distrust [6], acting as barriers to adoption even in the presence of technological access. These disparities have the potential to perpetuate or even widen existing socio-economic gaps within society.

It is essential to create inclusive learning environments that foster AI literacy across all educational backgrounds [8, 29]. This could mean introducing AI concepts early in education, promoting critical thinking about AI's limitations and potential biases, and providing opportunities for hands-on experience aimed at individuals with diverse technical skillsets [30]. Education and training programs, both formal and informal, will need to adapt to prepare individuals for a world where human and AI capabilities increasingly converge [31]. It is through a collective emphasis on educational initiatives and technological accessibility that we can bridge the potential knowledge gap, ensuring equitable access to and understanding of AI technologies across society [32].

The complex interplay between education, AI acceptance, and habit formation underscores the multifaceted nature of technology adoption within a rapidly evolving technological landscape. While previous research has established a link between education and technology acceptance [7, 14], the specific impact of education on the development of AI-related habits remains a relatively underexplored area. Understanding why individuals with higher education levels might exhibit greater reliance on AI, stronger habits, and higher AI integration has significant implications for both AI development and educational interventions aimed at promoting equitable adoption.

This study hypothesizes that individuals with higher education levels will demonstrate a greater tendency to form AI-related habits than those with lower education levels. This hypothesis builds upon several potential contributing factors. Firstly, formal education often emphasizes problem-solving skills and analytical thinking, which may make individuals more adept at identifying scenarios where AI can be a valuable asset [4, 17]. Secondly, higher education fosters confidence in approaching new technologies and complex systems. This confidence, potentially fuelled by academic self-efficacy [18], could translate into a willingness to experiment with AI tools, which is crucial during the initial stages of habit formation. Finally, educational experiences, particularly those with a STEM focus, could enhance an individual's technical skills and grant them greater exposure to AI advancements [5, 10]. Understanding the underlying mechanisms behind this potential link can yield valuable insights for closing the educational gap in AI adoption.

To achieve this understanding, it is important to investigate not only correlations between education and AI usage but also the qualitative experiences of individuals with diverse

educational backgrounds. For example, those with lower education levels might have positive perceptions of AI but lack the confidence or technical know-how to integrate it into their daily lives [15, 19]. Identifying such barriers can guide the development of more inclusive AI interfaces [13]. By illuminating the reasons behind the relationship between education and AI reliance, educational institutions and technology developers can collaborate on initiatives that ensure all users, regardless of background, can comfortably and confidently benefit from AI-powered advancements.

Through a deeper exploration of the interaction between education and AI adoption, this study aims to inform AI design and the development of educational interventions that encourage greater inclusivity in AI use. The focus on education also emphasizes that technological skills and AI literacy are becoming essential components within modern educational systems, preparing students not just for the jobs of today but also for the evolving demands of an AI-driven future [4, 30]. By fostering a deeper understanding of AI's capabilities and limitations, educational programs can empower individuals to leverage AI effectively and critically, becoming active participants in shaping the future of this technology [29, 30]. Equipping learners with the necessary skills and knowledge will not only ensure equitable access to AI's benefits but also contribute to the development of a more responsible and human-centred approach to AI integration across all levels of society.

III. METHODOLOGY

This This study employed a cross-sectional research design to investigate the complex interplay of factors that influence how people use and rely on AI features in their daily lives. We aimed to shed light on the motivations behind people's adoption of various AI technologies, how these features become integrated into their daily routines, and whether factors like self-perceived AI proficiency and usage habits influence the extent of this reliance.

To ensure a broad range of perspectives, we recruited 66 participants through online channels and personal networks. Advertisements emphasized the study's focus on everyday AI experiences. Inclusion criteria focused on basic technological literacy, regular use of common devices (like smartphones, computers, smart speakers, etc.), and a willingness to share their experiences with AI features. This approach aimed to capture insights from individuals who regularly encounter AI, regardless of their specific level of technical expertise, allowing for a focus on how education level shapes perceptions and habits despite similar levels of exposure.

The online questionnaire comprised multiple sections:

- **Demographics:** Participants provided age, gender, ethnicity, highest level of education completed, and location. This data is used to explore potential relationships between demographics and AI feature reliance, with a specific emphasis on how education level might interact with other variables.
- **Self-Perceived AI Proficiency:** Using Likert-scale items (1-7), participants assessed their level of comfort and proficiency with AI technologies. Questions inquired about daily use of AI features, the number and types of devices owned, and years of experience with technology.
- **AI Feature Reliance:** Participants focused on specific areas of AI reliance:
    - **Prediction:** AI features that anticipate needs, such as autocomplete search functions, personalized news feeds, or suggested products.
    - **Assistance:** AI assistants like Siri, Alexa, etc., used for tasks like controlling smart home devices, setting reminders, retrieving information, or composing basic messages.
    - **Recommendations:** AI-driven recommendations for products, movies, music, or other content encountered on various platforms or streaming services.

These sections allow for exploring whether individuals with different education levels exhibit disparities in how they rely on different AI functionalities.

The study followed a mixed-methods approach. Likert-scale items were used for ease of analysis, while open-ended questions gathered qualitative insights about motivations for using (or not using) AI features, positive/negative experiences, and how AI influences their decision-making processes. Statistical analysis methods (including ANOVA, T-tests, correlations) will be detailed in the next chapter to explore connections between education levels, technology acceptance, reliance on AI, and habit development.

IV. RESULT & DISCUSSIONS

This study investigated the intricate relationship between education level and reliance on AI features in daily life. By analysing data from 66 participants, we uncovered statistically significant connections between education and how individuals interact with AI. One Way ANOVA was performed using level of education as variable on the Likert questionnaire for the reliance on AI features.

The findings reveal a clear influence of education on reliance on AI recommendations ($p = 0.031$). Individuals with higher education levels (Bachelor's, Master's, PhD) scored significantly higher on the 'Recommendation Score' compared to those with a college degree or lower. This suggests that those with more formal education might be more receptive to, or place greater trust in, AI-powered suggestions for products, movies, music, or content encountered on various platforms.

Furthermore, the study found a significant association between education and overall, AI reliance ($p = 0.024$). The 'Reliance Score' captured participants' reported reliance on a combination of recommendation, prediction, and assistant features. Here, individuals with higher educational backgrounds consistently exhibited a greater tendency to integrate AI into their daily routines. This trend extends to the formation of AI-related habits ($p = 0.048$). The 'Habit Score' measured how ingrained AI use was in participants' daily lives. The results indicate that those with more education are more likely to develop consistent habits around using AI features. The analysis also yielded a significant overall effect ($p = 0.017$)

when examining the 'Total Score,' which combined scores from all measured areas of AI usage (recommendations, predictions, assistance). This underscores the broader link between education level and a general tendency to engage with AI on a more comprehensive level.

Interestingly, the study did not identify a statistically significant difference in reliance on AI features for prediction ($p = 0.308$) or assistance ($p = 0.057$) based on education level. 'Prediction Score' captured reliance on AI features that anticipate needs, such as autocomplete functions or personalized news feeds. 'Assistant Score' focused on the use of virtual assistants like Siri or Alexa for tasks like smart home control or information retrieval. While the p-value for assistant score is marginally close to the significance threshold (0.05), it doesn't provide strong evidence for a clear distinction. These findings suggest that education level may play a less prominent role in how people utilize AI for basic needs anticipation or assistance with routine tasks. It's important to delve deeper into the effect sizes to understand the magnitude of the relationships observed. The effect sizes (Eta-squared) fall primarily within the small to moderate range, ranging from 0.114 for 'Assist Score' to 0.151 for 'Total Score.' While these findings highlight a connection between education and AI reliance, they also suggest that other factors likely contribute to how people interact with AI technologies.

From the above results it can be said that the current study sheds light on the significant influence of education level on AI reliance. Individuals with higher education demonstrate a stronger tendency to rely on AI recommendations, integrate AI into their routines more extensively, and develop more consistent AI-related habits. These findings have crucial implications for both AI development and educational practices. It underscores the need for designing inclusive AI interfaces that cater to diverse user experiences, with a particular focus on features like recommendations where education appears to play a more influential role. Educators can also play a vital role by promoting AI literacy across all educational backgrounds, ensuring equitable access to the benefits of AI for all members of society.

Following the initial ANOVA results that showed education level influencing AI reliance, Tukey's HSD test helps us pinpoint exactly which educational groups differ in their usage patterns.

The most notable difference emerged in reliance on recommendation systems (Reccom_score). Individuals with Master's degrees showed a significantly stronger tendency to utilize AI recommendations compared to those with just a College degree ($p = 0.05$). This suggests that further education might lead to a greater trust or openness to AI suggestions for products, content, or media. Interestingly, no significant differences were found in how education level impacts reliance

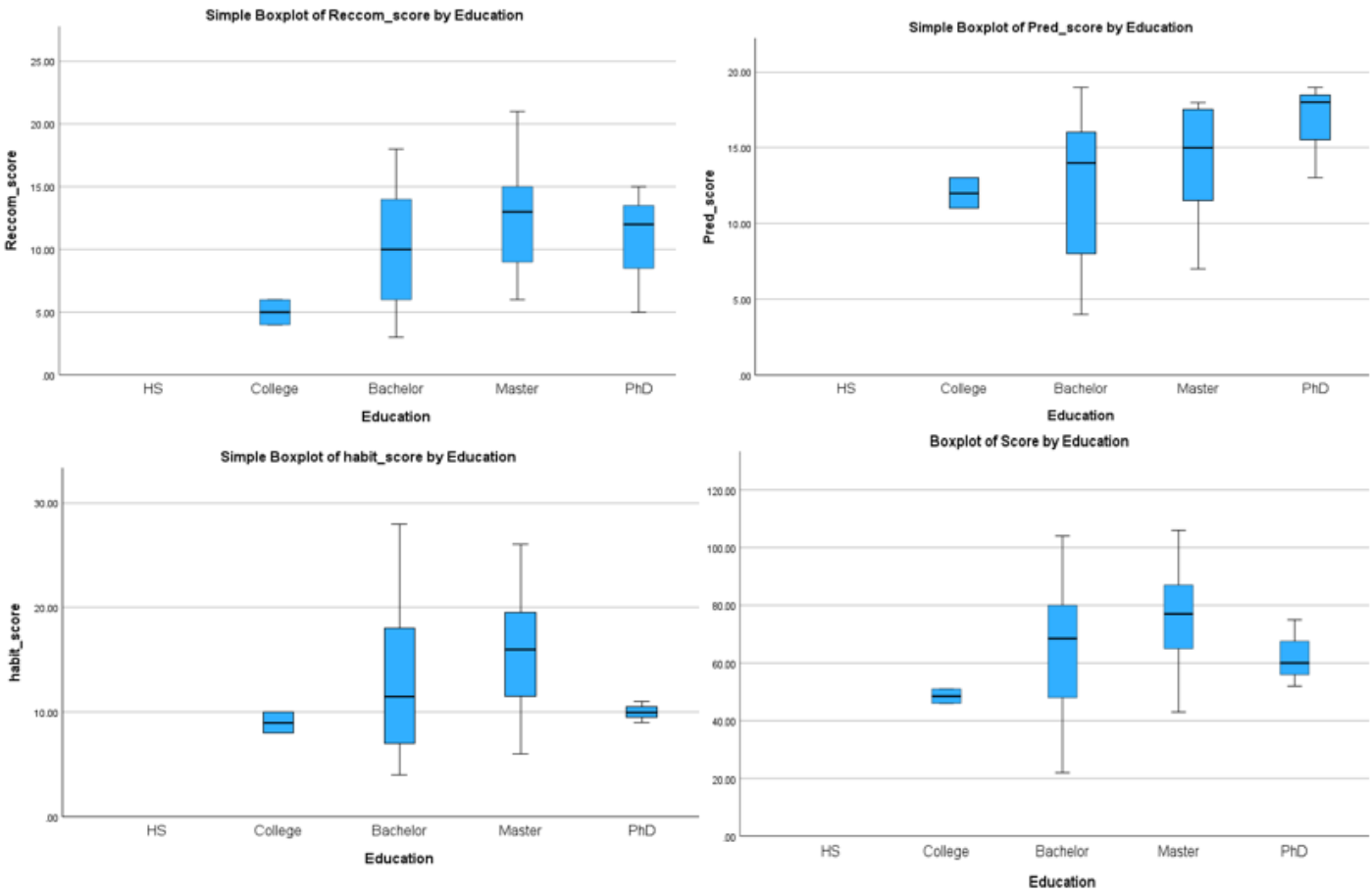

Figure 1: Shows the 4 Histograms of participants' scores in the respective sections based on their level of education.

on AI prediction features (e.g., autocomplete) or assistant functions (like Siri or Alexa). This indicates that basic functionalities for anticipating needs or completing tasks might be adopted similarly across educational backgrounds. Similarly, the overall reliance on AI (Relien_score) and the frequency of forming AI-related habits (habit_score) did not show statistically significant variations based on education level. There was, however, a trend hinting at potentially higher overall AI usage (Total Score) among those with Master's degrees compared to College graduates ($p = 0.090$). These findings highlight the need for more nuanced understanding of how education shapes AI interactions. While education seems to influence openness to AI recommendations, it may not significantly impact reliance on core functionalities or the overall tendency to integrate AI into daily routines.

Further, the study performed a Bivariate Correlation test to examine the relationships between education level and various aspects of AI reliance. The analysis revealed some interesting patterns. Education level exhibited a weak to moderate positive correlation ($r = 0.285$, $p = 0.020$) with reliance on AI recommendations (Reccom_score). This means that individuals with higher education levels tended to score slightly higher on the 'Reccom_score,' indicating a greater tendency to utilize AI suggestions for products, content, or media. However, the correlations between education and other AI features were generally weaker. Education showed a positive correlation with prediction scores (forecasting features like autocomplete) at $r = 0.224$ ($p = 0.071$), and assistant scores (functions like Siri or Alexa) at $r = 0.214$ ($p = 0.085$). While these relationships were in the positive direction, they fell short of achieving statistical significance at the commonly used alpha level of 0.05. This suggests that education might have a less prominent influence on how people use basic AI functionalities for anticipating needs or completing tasks. Similarly, the overall reliance on AI (Relien_score) and the frequency of forming AI-related habits (habit_score) did not exhibit statistically significant correlations with education level ($r = 0.206$, $p = 0.098$ and $r = 0.200$, $p = 0.107$ respectively). There was, however, a trend hinting at a potentially higher overall AI usage (Total Score) among those with Master's degrees compared to College graduates, although this correlation did not reach a level of strong statistical significance ($r = 0.283$, $p = 0.021$).

Overall, the correlation analysis suggests that education level plays a role in shaping AI interactions, but its influence seems most pronounced for reliance on AI recommendations. Individuals with higher education might be more receptive to, or find greater value in, AI-powered suggestions. For other aspects of AI use, the influence of education appears to be weaker, suggesting that these functionalities might be adopted more uniformly across different educational backgrounds. These findings highlight the need for further investigation into the specific reasons behind the link between education and recommendation reliance. It's important to understand why individuals with higher education might be more inclined to trust or utilize AI suggestions.

It is important to note that the limited sample size, particularly for PhD participants, warrants caution in generalizing these findings. Further research with more participants is needed to confirm these trends and explore how the specific types of AI technologies used might interact with education level to shape individuals' acceptance and habitual usage patterns. For instance, it would be interesting to investigate whether the technical complexity of an AI feature plays a moderating role, potentially influencing how education level affects user adoption. Additionally, future studies could explore how individual differences in personality traits or prior experiences with technology influence the relationship between education and AI use.

V. Conclusion

The current study sheds light on the complex relationship between education level and how individuals interact with and perceive artificial intelligence in their daily lives. Combining descriptive statistics, ANOVA, correlation analyses, and subsequent post-hoc tests, the findings reveal several important insights that both support and reshape the initial research hypotheses.

A key takeaway is the influence of education on the reliance on AI-powered recommendations. Across different levels of education, individuals showed significant differences in their utilization of AI suggestions. Specifically, those with a Master's degree exhibited the highest average reliance on recommendations compared to those with just a College degree. Further correlation analysis reinforced this finding, demonstrating a weak to moderate positive association between educational attainment and the integration of AI recommendations into daily routines. This alignment with the initial hypothesis underscores the need to create inclusive recommender systems and address potential biases that could arise from a reliance on user data associated with higher education levels.

Interestingly, the study did not find statistically significant differences between education levels in terms of reliance on AI-powered prediction or assistant features. Similarly, overall reliance on AI and the frequency of forming AI-related habits demonstrated only trending or weakly positive associations with education level. One interpretation is that basic AI functionalities for anticipating needs or completing tasks might be adopted more uniformly across different educational backgrounds, requiring less specialized training or knowledge. These findings underscore the multifaceted nature of AI adoption and suggest that education plays a more influential role in shaping reliance on specific AI functionalities, especially recommendations, compared to overall usage patterns or AI habit development. This aligns with the notion that while foundational AI literacy may be becoming more widespread, in-depth understanding of AI algorithms and capabilities that foster nuanced judgment and trust around recommendations might still strongly depend on the level of formal education obtained.

Future research should drive deeper into qualitative factors influencing AI adoption across different educational backgrounds. Understanding the reasons behind the stronger reliance on recommendations among those with higher education could inform the development of inclusive AI

interfaces. Furthermore, investigating the role of personality traits, technology self-efficacy, or field of study alongside formal education would provide a more holistic understanding of how individuals interact with AI technologies. From a broader perspective, this study underscores the importance of promoting AI literacy that extends across all educational levels. To ensure equitable access to the benefits of AI, it is crucial to equip all individuals – regardless of their background – with the skills and knowledge to confidently navigate and utilize these technologies in various contexts. Only through proactive efforts towards education and inclusivity can we bridge any potential knowledge gaps and foster a future where AI serves as a positive force for all members of society.

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