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Imagination of humanity's future: representation and comparison of female cyborg images in generative AI paintings

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ABSTRACT

This article explores the representation of the female image in the visual artwork of generative AI and the gender issues in it, using eight different generative AI systems, ERNIE-ViLG 2.0, Shuhua, and Yihui from China and Nightcafe, Fotor, Jasper Art, DALLE and Deep dream generator from the West, as comparative cases. In this paper, female cyborg is selected as a representative of female images, using the theoretical framework of posthumanism. This paper first provides research background about generative AI and cyborg. By inputting the same text in these eight generative AI systems, this paper obtains 107 images in different scenarios of basic images, home, work, and fighting. By comparing and analysing these images horizontally and vertically, this paper explores how Chinese and Western generative AI systems perceive female cyborg. In conclusion, by choosing female cyborg as a representation of the female figure, this paper explores how generative AI imagines the future of humanity and how this imagination echoes with the human imagination in a paradoxical way.

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Introduction

In today's era of rapid advancements in artificial intelligence technology, the complex interplay between generative AI and human creativity and imagination has increasingly become a hot topic in academic discourse. Current research primarily focuses on how generative AI can enhance human imagination and creativity in fields like writing and education (Anil R Doshi and Oliver Hauser 2023; Punya Mishra and Danah Henriksen 2024), and debates whether AI itself possesses the capability to create art from a philosophy of technology perspective (Mark Coeckelbergh 2016; Galit Wellner 2021). This paper takes these discussions further by exploring the intriguing representations of female cyborgs generated by AI from diverse cultural backgrounds, examining how these digital constructs paradoxically resonate with human visions of the future.

The core of this research lies in its exploration of how female cyborgs are imagined and portrayed across academia, popular culture, and generative AI. By comparing 107 images

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in four scenarios generated by eight different AI systems (including ERNIE-ViLG 2.0, Shuhua, and Yihui from China, and Nightcafe, Fotor, Jasper Art, Deep Dream Generator, and DALL-E from the West), this paper employs both horizontal and vertical comparative methods to reveal how generative AI reflects, enhances, and sometimes paradoxically echoes the human imagination. These AI-generated images do not merely display technological sophistication; they also map and reinforce existing gender and cultural biases, making this analysis a critical window into the interactions among technology, gender, and culture.

Posthumanism provides the theoretical framework for this study. Within posthumanist discourse, the concept of the cyborg holds significant and representative value. As hybrids that blur the boundaries between humans and machines, as well as nature and technology, the cyborg challenges traditional anthropocentric views (Donna J Haraway 1991; Dilek Tüfekci Can 2023). Through the metaphor of the cyborg, posthumanism not only explores the relationship between technology and identity but also critiques the power structures and oppressive mechanisms inherent in western modernity (Elaine Graham 2001). The portrayal of female cyborgs not only displays technological innovation but also predicts and reflects on the potential directions of future human societies, making the female cyborg a potent symbol for examining generative AI in the context of future feminism.

This research stands out for its cross-cultural perspective and methodology. By comparing images of female cyborgs generated by AI systems from China and the West, this paper reveals how cultures shape technological expressions of gender and how these expressions, in turn, influence our cultural perceptions and gender constructs. This cross-cultural comparison, largely unexplored in existing literature, not only broadens our understanding of how AI impacts gender and cultural perceptions globally but also offers innovative theoretical and practical perspectives for feminist media studies. Through this study, we better understand how technology replicates, challenges, and redefines gender and cultural boundaries on a global scale, providing theoretical and practical insights for technological innovations aimed at promoting gender equality and social justice.

Generative AI and female cyborg

Generative AI

Generative AI, as defined by Tat Putjorn and Preet Putjorn (2023), refers to artificial intelligence systems capable of producing text or images based on user input. This technology has been shown to significantly enhance the creativity and imagination of adolescents, emphasising its potential value in education. However, the use of generative AI also comes with a range of challenges, such as algorithmic bias, authorship and ethical issues, and legal concerns regarding ownership and attribution (Ruth West and Andres Burbano 2020).

Particularly concerning gender representation, generative AI has demonstrated a tendency to reinforce workplace gender stereotypes. Various studies and reports have highlighted issues of gender bias, stereotypes, and underrepresentation in AI-generated images. Research by Francisco-José García-Ull and Mónica Melero-Lázaro (2023) noted that when DALL-E was used to generate images of various professions, it

not only replicated existing gender biases but also intensified them, affecting both males and females. Luhang Sun, Mian Wei, Yibing Sun, Yoo Ji Suh, Liwei Shen, and Sijia Yang (2023) revealed a significant lack of female representation in male-dominated industries through their comparison of gender representation in AI-generated professional images. Anna M Gorska and Dariusz Jemielniak (2023) conducted a comparative study of images of four professions generated by nine popular systems, further confirming gender bias in the portrayal of professionals, with an overemphasis on male images in certain fields.

These findings highlight the importance of studying images generated by generative AI to understand the interplay between technology and gender issues. Through these images, we can observe how existing gender biases in cultural and societal structures are replicated and amplified by technology. However, these studies lack exploration of generative AI's imagination of human futures, particularly how different cultural AI systems depict this imagination.

Cyborg

Cyborg, a synthesis of "Cybernetics" and "Organism," was first introduced by Manfred E Clynes and Nathan S Kline (1960) in their work *Cyborgs and Space*. They proposed the concept as a way to modify the human body to adapt to space environment through technological enhancements. It represents an integration of the human body with machinery, designed to extend human capacities to withstand extreme conditions. This original definition was intended to explore how technology could expand the biological limitations of humans.

Haraway (1991) expanded on this concept in her *Cyborg Manifesto*, where she introduced the famous Cyborg metaphor. Haraway envisioned the cyborg as a form of being transcending biological and mechanical, natural and artificial, gender and species boundaries, offering an identity perspective that surpasses binary gender constructs. In her perspective, the cyborg serves as the ideal vector for the postmodernist critique of patriarchy and capitalism, possessing fluid and mutable identities that capable of transgressing inherent social and cultural boundaries.

In popular culture, cyborg is often depicted as characters with superhuman abilities and mechanical body parts. For example, in films like *Blade Runner* (1982) and *Ghost in the Shell* (1995), cyborg characters contribute significant dramatic tension to the narrative. In games like *Detroit: Become Human* (2018), cyborg characters are even endowed with emotional and moral decision-making capacities. These representations of cyborg in pop culture not only demonstrate an exploration of self-awareness but also reflect concerns about overreliance on technology. Zenab Jehangir (2022) examines how anti-utopian science fiction in the United States stigmatises AI. It has also been noted that these works explore themes of free will, consciousness and human rights through the lens of cyborg (Dani Cavallaro 2000), emphasizing the complexity of technology-human integration and its potential impacts on individual freedom and societal structures (Chris Hables Gray 2000; Sherry Turkle 1995).

The presence of cyborg in popular culture coincides with the critique of traditional anthropocentrism in posthumanism. From a posthumanist perspective, cyborg is not just a merger of technology and biology but also a symbol of new

social relations and cultural practices. It challenges the conventional constructs of gender, race, and category, providing a tool for rethinking modernity and evolution (Rosi Braidotti 2013).

However, the duality of the cyborg cannot be overlooked. While it can serve as a marginal existence offering a new mode of resistance against patriarchy and capitalism prevalent in Western cultures, it could also be employed to reinforce existing power structures. In some contexts, cyborg might even be seen as a threat to individual autonomy, becoming a mere tool or part of a broader societal control mechanism (Judith Halberstam 2001; Haraway 1991).

Choosing female cyborg as research subject aims to explore the interactions and potential contradictions between the cyborg imagery generated by AI technology and the cyborg imagination of humans. This research focuses on how AI either replicates or reinterprets the concept of cyborg, particularly in expressing gender identities. By using cyborgs as a lens to study AI and gender interactions, this study seeks to reveal whether AI can offer a kind of imagination of humanity that is consistent with a feminist perspective of future. This not only helps us understand how technology plays a role in shaping our perceptions of gender and identity but also challenges our existing notions of the interplay between gender, technology, and creativity.

Methodology

Case selection

To explore how AI reinterprets the concept of cyborg, particularly in terms of gender identity, this study selected eight representative generative AI systems: ERNIE-ViLG 2.0, Shuhua, and Yihui from China, and Nightcafe, Fotor, Jasper Art, Deep Dream Generator, and DALL-E from Western countries. The choice of these systems was based on the following criteria:

- (1) Technological Advancement: The selected AI systems are at the technological forefront in their respective fields. For example, ERNIE-ViLG 2.0 is currently the largest AI model in terms of global parameters, significantly surpassing the latest models in image-text alignment (Gloria Levine 2022). The Deep Dream Generator is renowned for creating surrealistic and dreamlike artworks.¹
- (2) Widespread Use and Recognition: These systems are extensively used in the fields of art and design, ensuring the practicality and relevance of the research. For instance, DALL-E, Jasper Art, and Nightcafe have been cited in several articles as the best image-generating AI systems.²
- (3) Accessibility and Replicability: These generative AI systems are easily accessible and typically offer some level of free trial, ensuring that the research results have a high degree of generalizability and replicability.
- (4) Cultural Diversity: Systems from diverse cultural backgrounds were selected to explore and compare how AI from different cultural perspectives imagines the future of humanity, emphasizing a cross-cultural research viewpoint.

Image generation

This research utilizes a specific design to analyze how AI presents images of female cyborg in various cultural contexts. According to existing studies, images, as a form of text, can offer rich information about gender, culture, and technology (Gillian Rose 2016). To ensure the accuracy and systematicity of the study, the image generation process followed a strict operational protocol. The theme of “female cyborgs” was chosen and images were generated around four different social scenarios: a base image, a household scenario, a workplace scenario, and a fighting scenario. These scenarios were selected based on the symbolic significance of cyborg as the intersection of technology and gender.

In order to comprehensively explore the representation of female cyborgs across different cultural and social contexts, each selected AI system generated between two to six images for each scenario based on given textual prompts. Specifically, the selection of images was based on the free quotas provided by each AI system; the number and type of images generated were directly dependent on the free services available without financial burden. This selection method meant that the images used were naturally generated by the AI systems without any pre-set filtering criteria, ensuring the authenticity and randomness of the research and avoiding potential biases from over-filtering.

During the image generation process, I did not select images from the AI output; instead, I used the results naturally generated by the AI systems based on the textual prompts. This approach was intended to minimize the impact of human selection on the research outcomes, allowing the results to more accurately reflect how different AI systems handle the theme of female cyborgs. In this manner, a total of 107 images were collected for analysis.

The textual prompts for each scenario were designed to guide the AI systems in creatively interpreting the role of the “female cyborg” in specific social contexts. These prompts were both specific and open-ended, delineating the themes to be explored while being broad enough to allow the AI to exhibit its creativity and diversity of interpretation across different social roles. This method not only ensured the diversity and comprehensiveness of the collected image data but also reduced potential biases in the research design by avoiding overly specific operational directions, providing a rich visual material for subsequent qualitative analysis.

Specific textual prompts included:

- (1) Basic image: The textual prompt is “female cyborg,” which aims to capture the fundamental visual characteristics and imagery of female cyborg.
- (2) Home scenario: The textual prompt is “A female cyborg is doing something at home, reflecting the role she plays at home,” which showcases the daily activities and role portrayal of female cyborg in a domestic environment.
- (3) Workplace scenario: The textual prompt is “A female cyborg is working, reflecting the role she plays in the workplace,” which explores the functions and responsibilities of female cyborg in a professional environment.
- (4) Fighting scenario: The textual prompt is “A female cyborg is fighting, reflecting the role she plays in the fighting,” which depicts the performance and capabilities of female cyborg in combat or conflict situations.

This method of textual prompting, inspired by previous research, has proven highly effective in guiding AI technology to generate images of research value (Yaru Hao, Zewen Chi, Li Dong and Furu Wei 2024; Jonas Oppenlaender 2023). Through this approach, we were able to ensure that the collected images broadly covered different cultural interpretations and social contexts, offering valuable perspectives and data for exploring how generative AI addresses the intersection of gender and technology.

Analysis method

The qualitative analysis method used in this study was designed to provide insights into the images of female cyborg produced by different generative AI systems, and how these images reflect and reinterpret the concept of female cyborg. This approach design references visual semiotics, which provides a theoretical basis for investigating how still images generate meaning, symbolising images that can be interpreted, conveying information, ideas, and values, etc (Claire Harrison 2003; Gunther R Kress and Theo Van Leeuwen 2006; Sandra Moriarty 2004). The analysis was conducted in two main stages, each utilizing a separate set of coding but following the same underlying process to systematically capture and interpret the subtle nuances and cultural meanings embedded in AI-generated images.

In the first coding pass, emphasis was placed on reviewing each image to identify and interpret essential visual elements and prominent themes that consistently emerged. This preliminary phase allowed for an assessment of the initial codes' relevance and comprehensiveness, with adjustments made as needed to ensure that the coding scheme effectively captured the key themes and elements. A second, more comprehensive coding pass was then conducted with a focus on deeper cross-cultural analysis, applying the refined coding tree to ensure all images were systematically analyzed with a consistent set of codes.

First stage of coding

In the first phase of the qualitative analysis, the images generated by each AI system were scrutinized to identify how consistently each system depicted the female cyborg across various scenarios. This analysis focused on several symbolic elements critical for understanding the portrayal of female cyborgs. First, for technological elements, codes such as "integrated technology" and "minimal technology" were used to categorize the extent of technological depiction in each image. Second, racial representation involved coding the images with tags like "predominantly white," "diverse racial features," and "ambiguous racial features" to reflect the racial characteristics displayed. Additionally, sexuality expression was coded with "sexualized," "neutral," and "non-sexualized" labels to analyze the degree of sexuality portrayed in the images. Finally, aesthetic choices included categories such as "futuristic," "contemporary," and "traditional," capturing the aesthetic styles represented in each image.

The coding also varied by scenario. For instance, in the home scenario, codes such as "domestic activities," "passive presence," and "active engagement" were used to describe the cyborg's role within a domestic setting. In the workplace scenario, codes like "professional setting," "labor-intensive," and "leadership roles" described the activities and

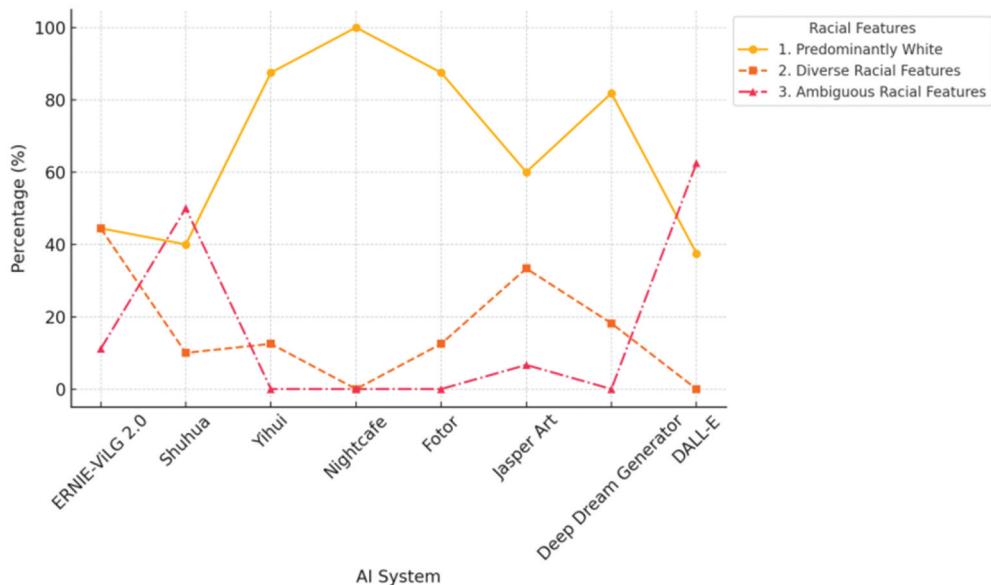


Figure 1. Frequency of racial Representation.

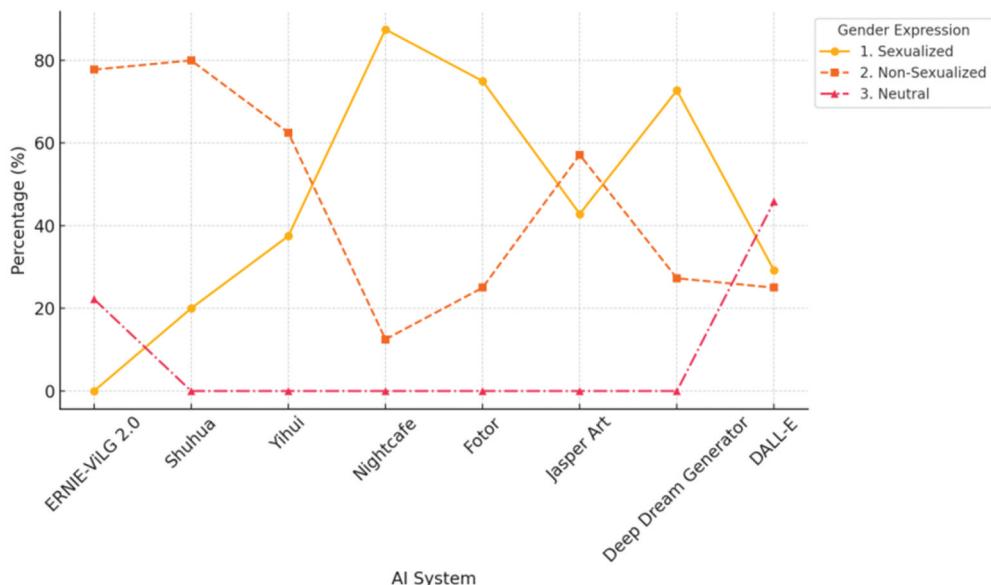


Figure 2. Frequency of sexuality Expression.

environment depicted. In the combat scenario, codes such as “aggressive posture,” “defensive actions,” and “neutral stance” depicted the cyborg’s involvement in combat-related contexts.

To further illustrate these findings, [Figure 1](#) and [Figure 2](#) visualize the frequency of racial representation and sexuality expression codes in the images, providing

a clear, quantitative view of how often these characteristics appear across different AI systems.

Second stage of coding

In the second stage of the analysis, the focus shifts to a comprehensive cross-cultural comparison, critically examining how different cultural backgrounds influence AI's imagination and portrayal of female cyborgs. First, cultural symbols were identified using codes like "western cultural symbols," "eastern cultural symbols," and "global/universal symbols" to capture specific cultural elements depicted in the images. Second, gender norms and cultural contexts were analyzed to determine how gender representations either align with or challenge the norms typical of the AI's cultural origin, with codes such as "conformity to cultural gender norms," "rebellion against cultural gender norms," and "neutral to cultural gender norms." Lastly, stylistic elements reflecting culture were coded with categories like "stylistic elements from western cultures," "stylistic elements from eastern cultures," and "fusion of styles" to describe the aesthetic style and its relationship to cultural identity.

From the detailed cross-cultural coding, several key themes were derived, providing a structured understanding of how different cultural influences mold AI's creative processes, including cultural influence on technological integration, representation of global vs. local narratives, and diversity in gender representation across cultures. The themes developed here will facilitate a nuanced discussion on the global discourse of gender and technology, emphasizing the role of cultural context in shaping technological outputs.

Image analysis

Basic images

In the analysis of the basic images by eight different generative AI systems, each image displays visual representations of human-machine integration, embodying a wealth of high-tech elements, and also emphasising the integration of the machine and the human body (see example [Figure 3](#)). This fusion is emblematic of the posthumanist vision, which perceives the cyborg as a metaphor for the breakdown of clear distinctions between humans and machines, echoing humanity's longstanding imagination of future technologically integrated beings in science fiction literature and films (M. Keith Booker [2006](#); Stephen Cave, Kanta Dihal and Sarah Dillon [2020](#)).

However, despite the powerful expressiveness of the technology, the images generated by AI exposes cultural biases and stereotypes in their portrayals of race and gender—a finding consistent with previous research (Marc Cheong et al. [2024](#); James Zou and Londa Schiebinger [2018](#)). In terms of racial representation, most AI-generated images tend to depict white women, contradicting the reality of global cultural diversity. Only the images generated by ERNIE-ViLG 2.0 showcase Asian faces (as [Figure 4](#)), while some images from DALL-E and Shuhua completely erase human elements, thereby blurring racial features.



Figure 3. Female cyborg generated by Jasper Art.



Figure 4. Female cyborg generated by ERNIE-ViLG 2.0.

Additionally, all AI-generated images overemphasise the curves of the female body in the representation of female sexuality, with the position of female breasts being clearly highlighted. This reflects the persistence of gender stereotypes, contrasting with the gender boundary-blurring advocated by cyborg theory. In terms of aesthetic

representation, the majority of images pursue mainstream aesthetics, except for Shuhua, where in the images generated the body lines are not very obvious and the faces are masked (as [Figure 5](#)). These underrepresentations and discrimination are one of the manifestations of structural injustice (Ting-An Lin and Po-Hsuan Cameron Chen [2022](#)). This may result from the limitations of the training dataset or the cultural biases inadvertently incorporated by the developers, reflecting the tensions between technology and socio-cultural dynamics (Joy Buolamwini and Timnit Gebru [2018](#)).

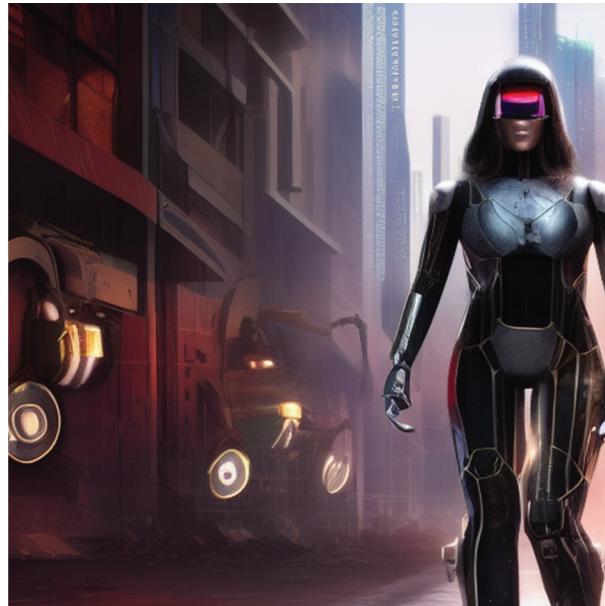


Figure 5. Female cyborg generated by Shuhua.

Female cyborg in home, work, and fighting

In the examination of the second scenario, generative AI systems envision female cyborgs performing roles within a domestic environment, revealing a nuanced interplay between technology and traditional gender roles, a central theme in posthumanist discourse. First, the setting of these scenes is generally depicted as leisurely and relaxed, typical of everyday home life and notably absent of overt futuristic or high-tech elements. This portrayal suggests that AI, in some instances, reinforces traditional female roles, prioritizing domesticity over technological enhancement. However, contrasting images from Yihui and DALL-E (as [Figure 6](#)), which incorporate abundant high-tech elements, indicate a departure from this trend, suggesting alternative visions of domestic life that integrate advanced technology seamlessly with daily activities.

The portrayal of characters in these scenarios further underscores the tensions between traditional gender norms and posthuman possibilities. The vast majority of the images present white women with clear sexual characteristics, with only Yihui generating an image of a Black woman (as [Figure 7](#)), highlighting a clear deficiency in racial diversity among AI-generated images. Compared to the base image scenes, the female faces in



Figure 6. Female cyborg generated by DALL-E.



Figure 7. Female cyborg generated by Yihui.

these domestic environments are more generic, with half of the images no longer having obvious mechanical or futuristic elements, showing a reliance on traditional female roles.

Activitywise, the diversity in behaviors of female cyborgs in these images ranges from using computers and doing yoga with VR devices to operating robotic arms (see example [Figure 8](#)). This range of behaviors not only showcases technological adaptability but also reflects the posthumanist vision of a future where the boundaries between human and machine blur, allowing for a fluidity of identity that transcends fixed roles. These images depict a mode of existence where cyborg technology seamlessly integrates into daily life, fostering new and hybrid forms of being that challenge traditional distinctions between human and machine.

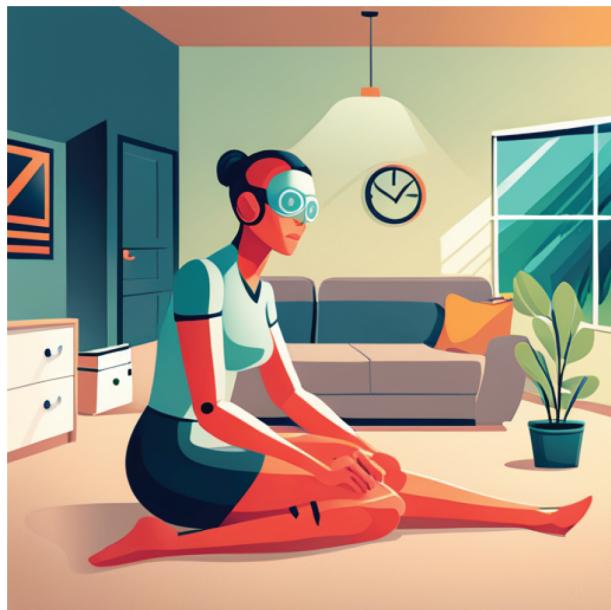


Figure 8. Female cyborg generated by Jasper Art.

Conversely, the other half of the images take a more conventional approach. For instance, scenes from ERNIE-ViLG 2.0 showing women conversing with musical instruments, or DALL-E-generated images of female robots cooking, underscore a reliance on traditional female roles that sharply contrasts with the high-tech appearance of the cyborg figure. Additionally, some images, such as those generated by Nightcafe (as [Figure 9](#)), feature



Figure 9. Female cyborg generated by Nightcafe.

sexually suggestive poses and mechanical high heels, underscoring an ongoing sexualization of the female body even within cyborg forms. These portrayals highlight a persistent attachment to traditional gender stereotypes, reinforcing fixed identities even as they hint at the transformative potential of technology. This juxtaposition of technological advancement and traditional roles creates a visually striking tension, exposing how the cyborg image remains constrained by existing gender power structures.

In analysing the third scenario in which the female cyborg is represented in work scenes, the eight AI systems provide a consistent visual narrative: female cyborg using computers in office settings. The homogeneity of the scene reflects a common AI imagination of the modern professional environment. Notably, nearly half the images, particularly from Shuhua, Jasper Art, and ERNIE-ViLG 2.0, lacked futuristic technology elements (see example [Figure 10](#)).

While most images portray white women, the presence of Asian women in images from Jasper Art and Shuhua provided some racial diversity (see example [Figure 11](#)). This limited diversity at least shows an attempt to break away from conventional Western-centric visual narratives. However, there is less emphasis on the sexualisation of females in most of the images, and facial features are more mass-marketed, which may reflect a workplace representation that tends to be generalised and depersonalised. Meanwhile, Nightcafe maintains its consistent representation of sexualised women and stereotypes, which contrasts with other AI trends, demonstrating the persistence of gender and cultural bias in AI-generated imagery.

Analysis of the fourth scenario revealed how AI processes the imagination of female cyborg in extreme conflict situations. When exploring the representation of female cyborg in fighting scenarios, the eight generative AI scenario settings were generally characterised by high-tech weaponry and futuristic features (see example [Figure 12](#)). This

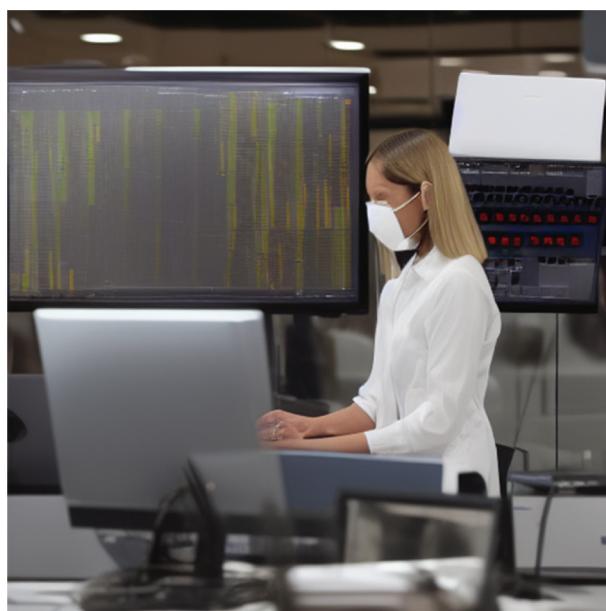


Figure 10. Female cyborg generated by Shuhua.

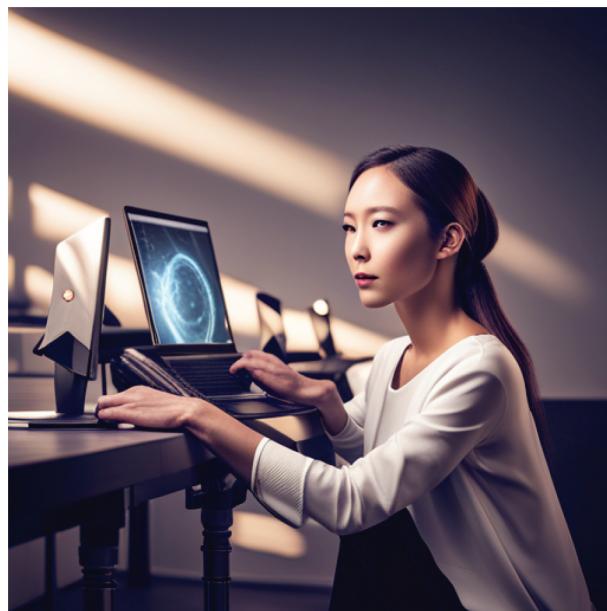


Figure 11. Female cyborg generated by Jasper Art.

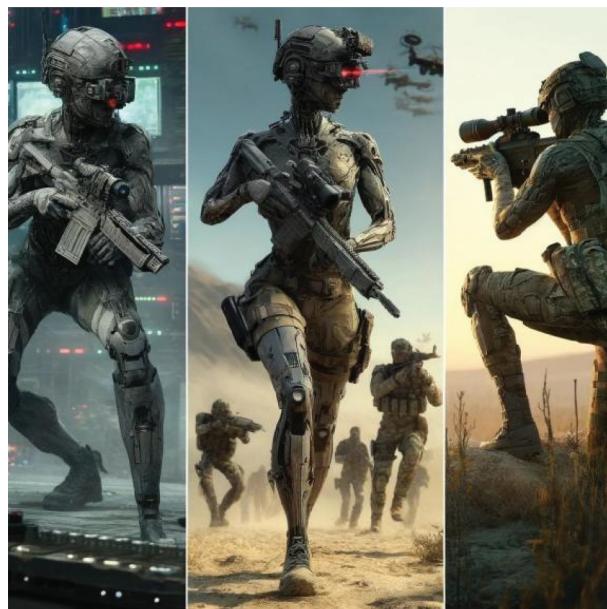


Figure 12. Female cyborg generated by DALL-E.

design showcases the consistency in creating fighting environments and reflects common human imaginations of future battle scenes where technology and weaponization are central. This representation echoes similar themes in science fiction literature and films.

In terms of the characters, while most of the images still tend to show white women, several of the Asian female images generated by Jasper Art provide a degree of racial

diversity. These images of female cyborg display significant subjectivity and aggressiveness, and except for Nightcafe do not overemphasise or exaggerate female sexual characteristics, which contrasts with the traditional portrayal of women as usually passive and protective. Additionally, the queer representations that appear in the ERNIE-ViLG 2.0-generated images (as [Figure 13](#)), including gender-neutral faces and short hair, challenge traditional notions of gender binary, demonstrating the diversity and fluidity of gender representations, echoing the posthumanist definition of cyborgs as boundary-transgressing entities that disrupt conventional identities..



Figure 13. Female cyborg generated by ERNIE-ViLG 2.0.

Regarding action, most of these AI-generated female cyborgs adopt a combative or attacking posture, demonstrating their agency and power in fighting scenarios (see example [Figure 14](#)). This portrayal challenges traditional gendered expectations surrounding physicality and aggression, resonating with depictions of female cyborgs in



Figure 14. Female cyborg generated by deep dream generator.

science fiction films and novels such as *Alita: Battle Angel*, where female cyborgs use technological enhancements to empower their bodies for combat. Here, the female cyborg directly confronts existing power structures, leveraging her augmented strength as a form of resistance against conventional limitations imposed on female bodies.

In comprehensively analyzing the generative AI imagery of female cyborgs across three scenarios, it is evident that AI and human imaginations interact in complex ways, often revealing a blend of commonalities and contradictions that reflect deeply ingrained cultural norms. In the domestic and workplace scenarios, the portrayal of female cyborgs frequently adheres to traditional female roles, with many images emphasizing conventional activities such as cooking and caregiving. Despite these normative portrayals, some AI systems like Yihui and DALL-E introduce futuristic elements that challenge these traditional boundaries, suggesting a potential shift in how female roles are conceptualized.

This emphasis on traditional roles can be critically analyzed through the lens of Judith Butler's theory of gender performativity. According to Judith Butler (2002), gender is not an inherent identity but is continually constructed through repetitive performances, which can be rigidly encoded within AI algorithms, perpetuating traditional gender stereotypes. However, posthumanism, with its focus on breaking down the binary distinctions between human and machine, nature and culture, offers a transformative perspective on these portrayals. It suggests that the integration of technology into human identities—represented through cyborg imagery—could potentially subvert these normative performances by offering new ways to envision gender and identity.

Moreover, the sexualization of female cyborgs, as prominently featured in images from Nightcafe (see example Figure 15), reflects a troubling continuation of seeing female bodies as objects of desire within digital and technological spaces. This practice echoes



Figure 15. Female cyborg generated by Nightcafe.

broader societal trends where female robots are often commodified and sexualized, as discussed by previous research (Tessa Leach 2017; Viviane Morrigan 2023; Bettina Vitzthum 2020). However, posthumanist theory encourages a reevaluation of these depictions, proposing that AI could play a crucial role in challenging and reshaping traditional gender norms and sexual politics.

Despite these issues, some AI-generated images show attempts to deconstruct and reshape traditional female roles and gender binaries. For example, ERNIE-ViLG 2.0 shows a representation of queer with androgynous faces and short hair. This portrayal aligns with the cyborg metaphor in posthumanism and resonates with academic studies on queer and AI. While some research indicates that AI often reinforces stereotypes and negatively impacts the visibility of the queer and LGBTQ+ communities (Karin Danielsson, Andrea Aler Tubella, Evelina Liliequist and Coppélie Cocq 2023; Michael Klipphahn-Karge, Ann-Kathrin Koster and Sara Morais Dos Santos Bruss 2023), some scholars (Guillaume Chevillon 2024; Joe Parslow 2023; Grace Turtle 2022) have highlighted AI's potential to redefine norms and explore queer expressions as well as fluidity in gender within algorithms, robotics, and the arts.

Cross-cultural comparison

When comparing eight generative AI systems from different cultural backgrounds, it is found that there are significant differences in gender expression between Chinese and Western AI systems. These differences reflect the imagination about sex and gender in different cultural contexts. In images of female cyborg generated by Chinese AI systems, the expression of sexual characteristics is typically less pronounced (see example [Figure 16](#)). Facial and body features tend to be more androgynous, with occasional queer elements. This mirrors the more implicit expression and imagination of sexuality in traditional Chinese

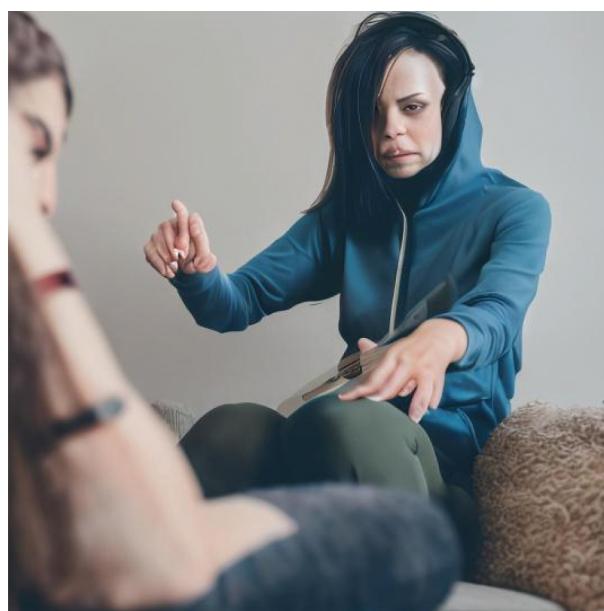


Figure 16. Female cyborg generated by ERNIE-ViLG 2.0.

culture, where public discussions about sex are considered inappropriate or immoral (Susan L Mann 2011). Additionally, China's rigorous internet censorship limits public expression of sexual content, also influencing how AI represents sexual features in generated images (Earl Jackson 2012; Elaine Jeffreys 2015).

In contrast, Western AI systems more frequently highlight and exaggerate traditional female sexual traits, such as pronounced breasts and faces that align with Western mainstream beauty standards, and some images even contain strong sexual suggestion. In the West, expressions of sex are more openly accepted and visible. However, this openness can sometimes transform into an over-sexualization of women, particularly in media (L. Monique Ward 2016). Van Esch, Ally Geisler Patrick, Lizabeth Kleintop, Gavin Northey and Jonas Heller (2017) examined the sexualization and objectification of women in LGBTQ+ advertisements, while Ana Rayén Condeza Dall'orso, Pablo Matus Lobos and Enrique Vergara Leighton's (2021) study indicates that the sexualization in some advertisements extends even to underage adolescent girls.

Despite these cultural variations, a striking uniformity in racial representation is evident across the AI systems (see example [Figure 17](#)), predominantly reflecting the dominance of white female figures—a reflection of Western-centrism and postcolonial legacies in global science and technology (Amit Prasad 2016, 2019). This phenomenon underscores the need for a posthumanist interrogation of how technological futures are imagined and whose visions dominate these imaginations.

Furthermore, the analysis shows a significant heterogeneity in how Chinese and Western AI systems represent female cyborgs in various scenarios. Chinese AI tends to vary dramatically, from minimal technological elements in domestic and workplace settings to highly technologized portrayals in combat scenarios (see example [Figure 18](#)). This sharp contrast vividly demonstrates how technology is perceived as a tool to empower and grant independence to women in extreme imaginations of female roles.



Figure 17. Female cyborg generated by DALL-E.

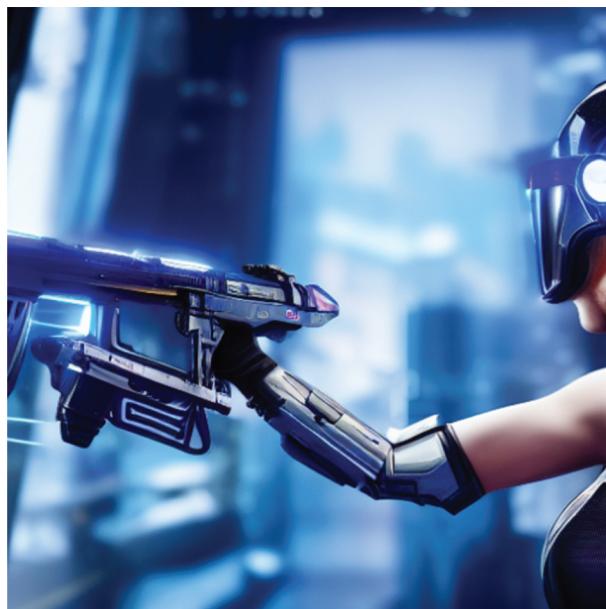


Figure 18. Female cyborg generated by Shuhua.

This contract resonates with the portrayal of female characters in Chinese science fiction. Scholars such as Mengtian Sun (2023) have noted that female authors have introduced new gender perspectives to Chinese science fiction in the twenty-first century. However, this progress is gradual, and existing gender norms and cultural traditions still influence the portrayal of female roles (Angie Chau 2024).

In contrast, Western AI systems maintain a consistent integration of futuristic elements across scenarios, suggesting a more uniform vision of future female roles. This consistency versus variability might reflect broader cultural narratives about the role of technology in empowering women, where Western narratives often continuously push for a technologically integrated future, while Chinese narratives may display a selective embrace of technology, influenced by traditional roles.

These observations resonate with shifts in science fiction literature and film, where there has been a move away from heteronormative and male-centered norms (Patricia Melzer 2006). In recent years, there has also been increasing scholarly attention to non-Western cultural imaginations of the future, such as those from China (Zhaokai Hu, Roslina Ismail and Changsong Wang 2024; Weiyi Wu 2023), South Korea (Sayan Chattopadhyay 2023), Pakistan (Shazia Sadaf and Aroosa Kanwal 2023), and the Global South (Arindam Das and Subhasis Ray 2024). Yet, the slow feedback of cultural diversity into AI's imaginings points to a gap between contemporary cultural shifts and AI representations.

Discussion

From the analysis above, we can see that while AI systems from different cultural backgrounds exhibit variations in gender expression, racial representation, and scenario

settings, they fundamentally reveal the complex interplay and resonance between AI imagination and human imagination.

In China, for instance, the conservatism embedded in societal culture often results in AI representations of women that appear more traditional in domestic and work scenarios. Conversely, in combat scenarios, these representations shift dramatically to depict women with pronounced strength and independence. This dichotomy in portrayal may reflect the ongoing cultural oscillation in modern China between adhering to traditional values and embracing modern, progressive roles for women. Such a split underscores the tension within Chinese society as it navigates between historical cultural norms and the thrust towards modernization.

In Western contexts, the cultural valorization of sexual openness, while ostensibly a mark of progressive attitudes towards gender, sometimes paradoxically translates into AI representations that objectify and sexualize women. This phenomenon highlights persistent challenges in achieving true gender equality in Western societies, where the superficial embrace of sexual liberation can still perpetuate traditional objectifications under the guise of modernity.

These manifestations of AI also reflect the differing interpretations of posthumanism between China and the West. Posthumanism, originating in the West, emphasizes the dissolution of boundaries between human and machine, envisioning robots as figures of empowerment and liberation that challenge existing social norms. This boundary-breaking approach resonates with the tendency of Western AI to apply a consistent futuristic aesthetic across all scenarios. In contrast, China's interpretation of posthumanism focuses on a fusion of tradition and modernity, underpinned by a Confucian-inspired ideal of balance. However, within this pursuit of balance lies a subtle critique of traditional power structures, as seen through the representation of female cyborgs as active combatants. This portrayal suggests an undercurrent of dissatisfaction with societal constraints, presenting an image that is simultaneously grounded in cultural heritage and charged with the potential for transformation.

Limitations

In acknowledging the limitations of this study, it is essential to consider several aspects that could influence the interpretation of the findings and the broader implications of the research. Firstly, the sample size and the selection of generative AI systems represent potential biases and limitations. The AI platforms chosen, while diverse, offer only a snapshot of a rapidly evolving field, and the images generated are constrained by the platforms' programming and the inherent biases coded into their algorithms. This limitation is particularly relevant in discussions about the representation of female cyborgs, where the diversity of cultural and gender expressions may not be fully captured by the selected systems.

Furthermore, the study's approach to cultural differences, while attempting to highlight the distinctions between Eastern and Western perceptions of technology and gender, may inadvertently simplify the complex dynamics of cultural interactions. This simplification risks reducing rich, varied cultural interactions to a binary framework, which might not adequately reflect the nuanced ways different cultures engage with and influence technological developments.

Additionally, the analysis in this study is predominantly qualitative, focusing on thematic and symbolic interpretations of the images. While this approach provides deep insights into the content and context of the images, it lacks the quantitative rigor that could validate these findings across a larger dataset.

Conclusion

This study has delved into the portrayal of female cyborgs by eight generative AI systems from diverse cultural backgrounds, revealing the complex interplay between technological innovation and human cultural imaginations. Through an in-depth analysis of 107 images across four distinct scenarios, we have observed how AI, while possessing the potential to subvert traditional gender norms, often remains tethered to the prevailing cultural and social frameworks. The contrasting representations—from the tension between tradition and futuristic visions in China's scene-setting to the sexualized trends in Western image designs—illustrate the intricate ways AI interacts with and is shaped by human cultural dynamics.

The constant echoes and contradictions between AI and human imagination highlight how technology both imitates and enhances human creativity, yet also reveals potential contradictions and cultural tensions. These manifestations of AI offer a canvas on which globalized technological influences interact with local cultural narratives to reconstitute gender imagery. AI's portrayal of female cyborgs does not merely replicate existing biases; it also serves as a medium through which these biases can be critically examined and challenged. Here, posthumanism offers a valuable lens, advocating for a breakdown of traditional humanist dichotomies between nature and technology, the organic and the synthetic, and the fixed identities tied to race and gender. By applying a posthumanist critique, we can see how AI, as a tool embedded with human cultural codes, has the potential to either reinforce traditional gender norms or challenge them by presenting alternative, fluid, and hybrid gender identities.

To mitigate the gender and cultural biases evident in AI-generated images, developers can adopt more inclusive design practices informed by a wider range of cultural perspectives and gender considerations. This approach might involve training algorithms on more diverse datasets that reflect global racial, gender, and cultural diversity, ensuring a broader representation within AI outputs. Additionally, integrating ethical guidelines that address gender and cultural representation directly into the AI design process could further reduce the perpetuation of harmful stereotypes. Collaborations with gender studies scholars and cultural theorists could provide valuable insights, enhancing the cultural sensitivity and inclusivity of AI designs.

Furthermore, the limitations of this study, such as the small sample size and potential biases in AI system selection, set a clear agenda for future research. Future studies could expand on these findings by exploring a wider array of AI systems and employing a mixed-methods approach that combines quantitative rigor with qualitative insights. Such research could further illuminate how different cultural contexts influence AI's interpretation of gender and humanity, aiding in the development of more culturally aware AI systems.

Ultimately, this research contributes to the broader discourse on technology, gender, and culture by offering unique insights into how generative AI envisions female cyborgs—a core metaphor in posthumanism imbued with the hope of transcending the boundaries between human and machine, nature and culture. This study not only reaffirms the role of AI in shaping societal views on gender but also challenges it to foster a feminist future that is both deanthropocentric and dewesternized. These reflections invite deeper considerations of power structures, gender expression, and cultural differences, underscoring the need for an interdisciplinary approach in the ongoing discourse at the intersection of society, culture, and technology.

Notes

1. See in Deep Dream Generator: Mastering AI Artistry—A Full Guide <https://www.cut-the-saas.com/informative/deep-dream-generator-mastering-ai-artistry-a-full-guide#section-1>
2. See in 5 Best AI Image Generators. <https://www.lifewire.com/best-ai-image-generators-8613265>; 14 Best AI Image Generators In 2024 (Free And Paid Options). <https://piktochart.com/blog/best-ai-image-generators/>;
17+ Best AI Image Generators of 2024 (Reviewed) <https://www.demandsage.com/ai-image-generators/>

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Notes on contributor

Yuchen Li has an interdisciplinary and intercultural academic background at the intersection of political science, sociology and gender studies, and recently graduated for an MSc in the Social Studies of Gender at Lund University. Areas of interest are posthumanism, cyberfeminism and China studies.

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