

Safeguarding AI in the UAE: Preserving Cultural Heritage, Ethics and Visualities of the Future

(Executive Summary)

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1. Introduction

The United Arab Emirates' (UAE) investment in generative artificial intelligence (GENAI) and digital transformation, under the banner of the UAE AI Strategy, aligns with the UAE Centennial 2071's focus on artificial intelligence (AI) and digital transformation. This AI roadmap will contribute to all sectors of the UAE, including education, economy, government development, and community happiness through various GENAI technologies implementations in different sectors to include energy, tourism, and education. GENAI technologies, based upon machine learning, deep learning, natural language processing, and algorithms, are gaining momentum across postdigital ecosystems at both visible and invisible levels. Used to generate written texts, videos, images, and content, they are pivotal to the postdigital transformation of our sociomaterial realities. Large language models (LLMs) that convert user-written text descriptions or prompts into images are used by millions of users every day. But visual portraits developed historically as value-laden constructs embedding Eurocentric social, racial, gendered, and classed hierarchies. The 'family portrait' has long played an ideological role in reinforcing western representations of what constitutes a 'family' while occurring within the broad category of the 'mediated portrait'. However, what are the implications of GENAI, for representing and preserving Emirati visual heritage and values?

Considering the importance of GENAI and digital transformation in the UAE and globally, it is vital to safeguard how AI algorithms and infrastructures are defining the UAE's traditional narratives and future stories in coherent, inclusive and nuanced terms. Focus on the cultural implications of GENAI in this study, via a novel and innovative AI visual cultures framework, is timely and imperative. In other international

contexts, research teams are already involved in open-source AI cultural heritage projects which aim to digitize huge amounts of information currently stored in archives and museums. Belgium and the Netherlands, for instance, are comprising AI digital assets relating to material objects (artworks, monuments) and immaterial forms of heritage (values, ideas) since these are essential building blocks of local, national, or transnational identities and indispensable for preparing individuals and societies for the future. But in the UAE context, there is a gap in the scholarship and policy-driven research exploring the effective fusion of GENAI with the UAE's rich and complex traditions of visual, oral and cultural storytelling which this study seeks to address.

The primary research objective was to explore the implications of GENAI on visual representations of Gulf and UAE visual heritage and culture.

2. Research Question(s)

The central question of the study asks, what is being produced or generated by text-to-image GENAIs?

3. Research Methods

Unlike quantitative research, which focuses on numerical data and statistical analysis, qualitative case studies can emphasise rich, detailed descriptions and interpretations of the case under investigation. This postdigital visual case study delved into the context surrounding GENAI's family portraits, comparing several GENAI platforms' production of images of Emirati and Gulf families and comparing these with family types from other geographical areas, including western families and refugee families.

These iterative cycles of postdigital visual case study were deployed to explore the complex postdigital semiotic entanglements of GENAI with racial capitalism, including both technologically encoded and systemic racial bias. In terms of methods, the use of three different GENAI platforms was selected to assemble a comparative corpus of images. The GENAI imaging tools, including Imagine AI, Microsoft Bing, and DreamStudio, were chosen because they are free and easy to use due to their accessible interfaces. Additionally, these platforms are amongst some of the most popular GENAI tools coming out of Silicon Valley. Dream Studio was released in 2022 by Stable Diffusion as a text-to image competitor to DALL-E2. Imagine AI was launched by META in 2023 while the AI-powered Microsoft Bing emerged in the same year.

To build a GENAI corpus of images, the text-to-image generation process involved prompts relating to different sociocultural types of family portrait, including 'western', 'Gulf', 'Emirati' and 'refugee'. This

resulted in a corpus of 22 images, from three thematic textual prompts, and across three platforms. This enabled each of the images to be interpreted individually as well as in comparison and contrast. Within the comparative case of the GENAI family portraits, content, and meaning were understood as being demonstrated through the semiotic signs, multimodalities, and potential interpretations of the viewer. Semiotic descriptors were applied to analyse the GENAI images and included the following: framing, stance, modes of address/gaze, body shape, skin colour, clothing, accessories, backdrops, and physical proximity, amongst other variables arising throughout the analysis. Analytical comparisons of the images helped to slowdown interpretation of GENAI's visualities according to the interpretive criteria of the inquiry. Following the assembly of the corpus, the analytical process involved distinct analytic categories to recognise GENAI platforms' potential model-based harm. This included observance of the categories of stereotyping, erasure, dehumanisation, and disparagement. In turn, this helped to reveal at least three different types of hallucinations in its theorisation of image generators: including (1) hallucinations as perceived errors in the results of the GENAI tool, (2) hallucinations as a distorted view of reality, and (3) hallucinations as myths and regimes of Whiteness.

4. Key Findings

Key findings revealed evidenced-based examples of how GENAI, following the semantic prompts, of 'western family'/'Gulf family'(including Emirati family) / and 'refugee family', produced a series of visual hallucinations. First, these hallucinations consist of anatomical inaccuracies including distorted facial features and misshapen limbs. Second, each of the GENAI tools produced images distorting the realities and diversities of 'western', 'Gulf', and 'refugee' families. Third, the findings demonstrate GENAI's semiotic myths and stereotypical illustrations of family types that severely detract from Gulf and Emirati cultural values and visual heritage.

Implications

Consideration of GENAI image hallucinations indicates that a limited range of representations of people of colour or family types being produced. The typecasting of different family composites arguably stems from the long trail of western epistemologies and limited data sets. Although these logics are artificial, there is a danger that GENAI's depictions could be confused for 'true' objects or flatten the complex layers of coding that are involved in producing these representations. Just as the GENAI's depictions of 'western families' generally eroded people of colour, the 'Gulf family' portraits distort varying cultural characteristics of gender relations and Emirati heritage. They reveal problematic examples of how UAE cultures, visualities and aesthetic values are being defined by GENAI across a series of AI platforms. Theorising suggests that,

in view of the UAE's immense investments in GENAI infrastructures, it is vital that we know more about the GENAI algorithms that are defining the UAE's cultural heritage and future stories.

5. Conclusion

- **Summary of Impact: Conclude with a summary of the overall impact of the research.**

In terms of impact, I presented a paper based on the research at the Fifth International Conference on Semiotics of Culture and Visual Communication. *Cyprus University of Technology, Cyprus (2024)*. An article was published, titled 'Generative AI's Portraits of Whiteness: A Postdigital Semiotic Case Study,' in the Q1 Scopus journal - *Postdigital Science and Education (2024)*. The research results offer a timely articulation of how GENAI is impacting representation of cultural heritage and visualities in the UAE and Gulf region.

Recommendations for further research are to first explore ethical guardrails to help to diminish bias in algorithmic identification. Second, future projects should continue to highlight the unreliability of GENAI in representing UAE and Emirati visual heritage and culture.