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# *The Use of Artificial Intelligence in Graphic Design*

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**Abstract:** *This paper investigates the transformative potential of Artificial Intelligence (AI) in graphic design. By leveraging advanced computational techniques, AI tools promise to revolutionise traditional workflows, boosting creativity, efficiency, and personalisation. The research focuses on a practical application of AI in the development of a comprehensive graphic identity for an American-themed restaurant located in Timișoara, Romania, highlighting the advantages and challenges of using artificial intelligence. Key methods include a comprehensive literature review, a survey targeting the Romanian graphic designers' community, and applied research to identify current trends and specific needs in AI tools. The findings reveal significant insights into the impact of AI on design workflows, offering valuable contributions to both the scientific community and industry practices.*

**Keywords:** *artificial intelligence, graphic design, generative AI, restaurant branding, visual identity, AI-powered design*

## 1. Introduction

Artificial intelligence (AI) enables machines to emulate human intelligence through machine learning. Picture machines that can learn from data, recognise patterns, and adapt their behaviour – that’s the essence of AI. This technology equips computers to perform tasks that have traditionally required human intelligence, such as understanding language, recognising objects, and making complex decisions. For example, self-driving cars utilise AI for these tasks: they analyse vast amounts of data to identify patterns and adjust their behaviour based on experience, continually improving over time (Gallardo-Rodriguez and Jimenez Rodriguez, 2023).

Graphic design forms the foundation of visual communication. It encompasses a wide array of creative pursuits that employ images, fonts, colours, and shapes to convey messages, evoke emotions, and engage audiences across various platforms. It involves the art of strategic arrangement, where these elements come together to create impactful visual compositions that resonate with viewers. Graphic design influences how we interpret and interact with the world around us, from printed materials to digital environments (Jia et al., 2023).

The intersection of AI and graphic design involves utilising machine learning to create and enhance graphics. AI tools fall into two main categories: generative design tools and AI-assisted design tools. Generative tools, such as DALL-E 2 and Midjourney, can swiftly generate images based on user input, although they raise ethical concerns due to the potential use of unlicensed art in their training data. In contrast, AI-assisted tools streamline the design process by suggesting colour schemes, translating drawings into code, and generating initial graphic package concepts. These tools eliminate many time-consuming tasks, allowing designers to focus on more strategic and creative work (Fatima, 2023).

## 2. Research methods

The primary objective of this paper is to investigate the perceptions and perspectives of professional designers concerning the use of artificial intelligence in graphic design. This study will explore the current limitations, future implications, requirements, and concerns related to the integration of artificial intelligence into the graphic design process.

The following research questions will be addressed in this paper:

Q1: What is the status of artificial intelligence in graphic design, and what future needs exist?

Q2: In what ways can artificial intelligence enhance the process of creating a graphic package for an American restaurant in Timișoara?

To address research question Q1, an analysis of scientific papers relevant to the chosen field was conducted. Based on this analysis, a survey was developed and distributed to the graphic designer community in Romania.

### *Data collection methods*

Search field:

AI in graphic design, Designing with AI, AI collaboration in Graphic Design, Integration of AI technologies in Graphic Design

Publication date: 2018 – 2024

Databases: Google Scholar

### *Selection Procedure*

For this specific methodological approach, only scientific papers and books were selected, excluding reviews and PowerPoint presentations. The titles, keywords, and abstracts of the papers were recorded. A preliminary screening of the articles was conducted using the inclusion and exclusion criteria outlined in Table 1.

Table 1: Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
<p>Papers/books relevant to the field of graphic design.</p> <p>Papers/books that include introductions of graphic design tools that use AI.</p> <p>Conference papers/books and journals.</p> <p>Papers/books including keywords for AI-assisted graphic design.</p>	<p>Papers that develop the topic of artificial intelligence in a context other than graphic design.</p> <p>Irrelevant papers and with no keywords specific to AI in graphic design.</p>

*Identification*

The initial search for relevant academic literature began on Google Scholar, where a comprehensive set of keywords was examined across the first five pages of results. This search identified 210 potential research papers. Zotero was employed as a research assistant to facilitate the collection and organisation of the papers. Following a review of the titles, keywords, and abstracts, 43 papers were retained. A brief skim of the materials was conducted, during which inclusion and exclusion criteria were applied. This process resulted in 24 selected works. These 24 scientific papers were thoroughly examined and utilised to address the research questions, as well as to contribute to the introduction of the dissertation.

To validate and verify research question Q2, two graphic packages were created that utilise artificial intelligence tools for the generation of design elements, either partially or fully. Based on the accumulated experience, a set of best practices has been proposed.

### 3. Results

The existing literature demonstrates a growing interest in the potential of AI to enhance design processes. After analysing 20 scientific papers and 2 books, the tools mentioned that are based on artificial intelligence were extracted.

This summarised the AI tools utilised for creating design elements, as well as those employed for developing design products (Dehman, 2023; Fatima, 2023; Felzmann et al., 2020; Gallardo-Rodriguez and Jimenez Rodriguez, 2023; Guo et al., 2021; Hughes et al., 2021; Jia et al., 2023; Li, 2021; Liu et al., 2021, 2023; Mustafa, 2023; Ndukwe, 2022; Osipov and Ulimova, 2013; Patil, 2023; Rezk, 2023; Rezwana and Maher, 2023; Rospigliosi, 2023; Seeber et al., 2020; University of Sydney, Australia and Meron, 2022; Verganti et al., 2020; Wernersson et al., 2023; Zheng et al., 2019).

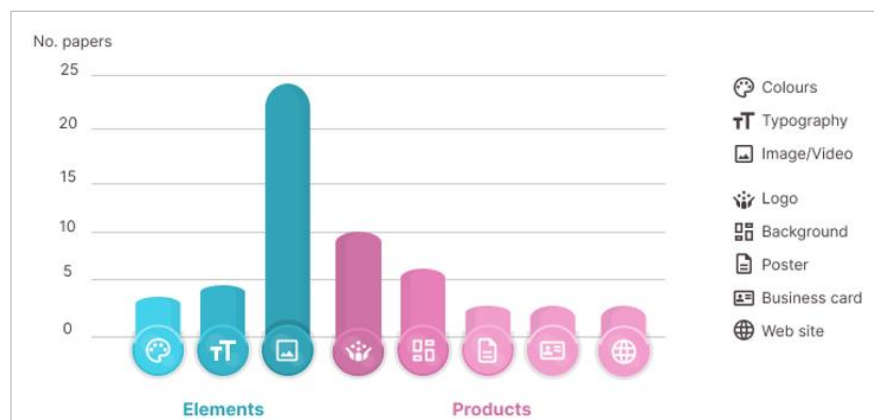


Fig. 1. Number of scientific papers referencing a specific category of AI tools used in graphic design

It is noted that the most numerous AI tools used for creating design elements are those dedicated to images, illustrations, or videos. In terms

of AI tools employed in the development of design products, the most frequently mentioned are those for generating logos (Liu et al., 2021).

To understand the graphic design community's perspective on AI, a survey was conducted. Although the participant pool was not extensive, it included design professionals, providing a valuable snapshot of their experiences and opinions.

The survey began its inquiry into artificial intelligence with the fourth question, asking respondents to identify any AI tools they use within their design workflow. Notably, 19% of participants indicated that they do not currently utilise AI tools. The remaining 81% of responses highlighted a diverse range of technologies adopted, with some commonalities emerging.

Software from the Adobe suite, including features such as Firefly, Generative Fill, Photoshop AI, and Illustrator AI, received 16 mentions. Text generation tools were also widely used, with ChatGPT receiving 20 mentions compared to just 4 for its Google counterpart, Gemini.

In the realm of generative AI capable of transforming text prompts into images, illustrations, or videos, the Midjourney app secured 16 mentions, significantly outpacing DALL-E, which garnered only 5 mentions. Other tools in this category include NightCafe Creator, Canva, Ideogram, WarpFusion, Visions of Chaos, GettyAI, Freepik AI, and Gencraft.

Question five examined how designers utilise AI tools. The majority (66.7%) reported using them for digital image creation, followed by colour palette generation (23.8%). Interestingly, none of the respondents indicated using AI tools for business card design.

The analysis revealed a consensus: while AI is still in its early stages within graphic design, its potential is undeniable. The most frequently cited benefit is the significant reduction in design time, allowing designers to focus more on the creative aspects of their work. Additionally, AI is perceived as a valuable brainstorming partner, providing a wealth of options when inspiration is lacking.

However, concerns were also raised. Common themes included a lack of accuracy in certain areas, such as illegible fonts, nonsensical wording, and anatomical inconsistencies. Participants also highlighted the need for clear instructions to guide the AI, noting that this can be time-consuming, as AI does not immediately grasp a designer's intent.

### **Graphics package implemented with the help of artificial intelligence**

Nestled in the heart of Timișoara, Sandy's Diner encapsulates the classic American diner experience of the 1960s. This chapter explores the diner's current visual identity and proposes a new direction through two graphic package options: one that is entirely AI-generated and another that utilises various AI tools for a semi-automated approach.

This case study demonstrates the potential of AI in streamlining design workflows, allowing designers to focus on more strategic creative decisions. However, it also underscores the importance of ethical considerations and the ongoing need to refine and maintain AI design tools.

Sandy's Diner's current logo effectively captures its retro vibe. The depiction of a 1960s-style waitress, complete with bright red hair, a white bandana, and a striped shirt, embodies the diner's welcoming and lively spirit. This detailed logo evokes nostalgia and invites customers to enjoy a classic culinary experience. However, its intricate design can present challenges when integrating it into smaller graphic materials.

The proposed new logo for Sandy's Diner offers a sleek and modern interpretation of the brand identity. It features the restaurant's name in a classic black serif font, enhanced by a distinctive element: the letter "e" in the word "diner" is replaced by a burger icon, reinforcing the diner theme of the establishment.



Fig. 2. Comparison between the old and the new logo



Fig. 3. Comparison between the existing colour palette and the proposed colour palette

Sandy's Diner's current colour scheme features a three-colour palette that instantly evokes the nostalgia of 1960s American diner culture. The proposed new four-colour palette, while retaining the familiar red, introduces a modern, sophisticated vibe with a bold twist, creating a look that is noticeably different yet refined.

The existing visual identity leans heavily on food photography, featuring images of fries, burgers, coffee, and desserts to showcase the diner's offerings and give customers a clear sense of the menu. In contrast, the new visual identity adopts a clean, minimalist aesthetic, conveying a sense of contemporary sophistication.

Colourful posters and cluttered menus are a thing of the past. To ensure customer expectations align with the actual dining experience, the client opted to exclude specific food photography from the new visual identity. This eliminates the potential for misrepresentation that could arise from digital depictions of dishes.





Fig. 4. Comparison between existing illustrations and proposed illustrations

To uphold the brand’s personality, a selection of representative images was incorporated. However, to ensure visual consistency, dishes were carefully chosen for their generic appearance, regardless of the chef. This approach maintains alignment with the overall clean and minimalist aesthetic while still authentically representing Sandy’s Diner’s culinary offerings.

***Graphics Pack 1: All-in-One***

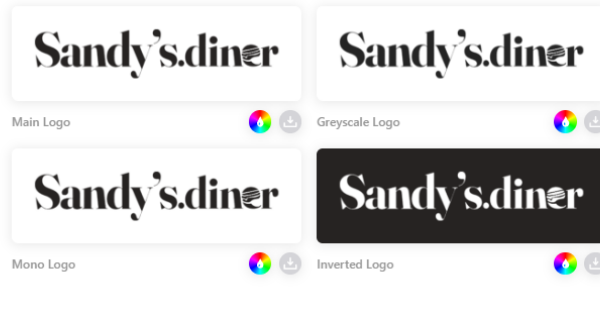
In the search for a free, AI-powered tool capable of generating a brand identity based on an existing logo, few options were found. Most required additional payment or did not allow for logo integration. Eventually, uBrand (<https://ubrand.com/>) stood out as a promising platform, offering a free AI-driven design experiment for generating a complete graphics package.

uBrand impressed by creating logo variations suitable for different backgrounds (light and dark) and even generating alternative versions of the logo symbol itself.

### Color Variations

Adjust padding and color to download the logo you need

Padding:



### Logo Symbol

Can be used as profile image, Favicon, etc...

Padding:

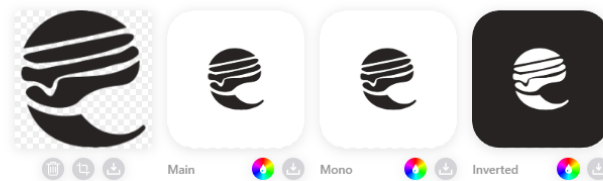


Fig. 5. Logo variations

While the AI performed well in generating logo variations, it required manual input for selecting the colour palette and typography. Similarly, defining the brand's tone of voice, values, and mission was not automated by the AI; these elements needed to be provided for the tool to develop brand positioning.

With Sandy's Diner's brand identity defined, the platform's graphic product options were explored. These allowed for customisation with a chosen style using two colours (primary and background) and a geometric theme.

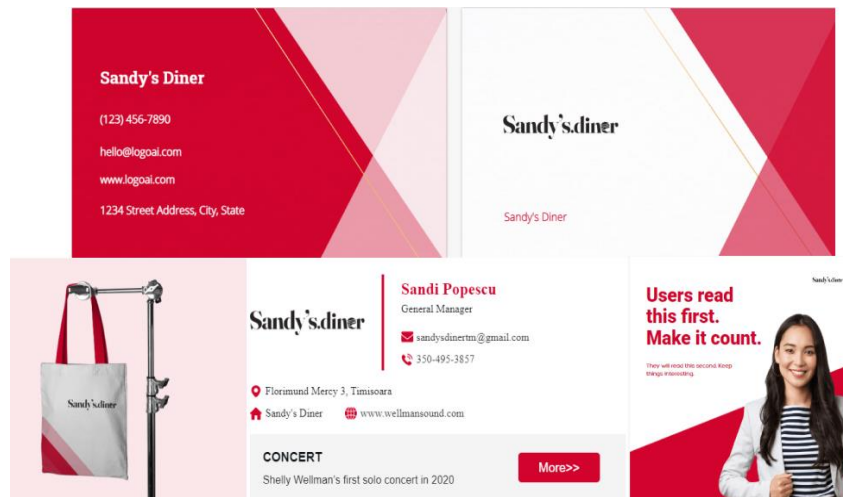


Fig. 6. Graphic products generated by uBrand

Unfortunately, uBrand's social media post generator, which operates based on the selected style, did not align with the brand's visual identity. This misalignment likely stems from the platform's lack of industry-specific considerations when selecting templates, resulting in generic posts that weren't suitable for a restaurant's social media needs.

While uBrand demonstrates strength in generating graphic packages, a notable limitation is the need for a PRO subscription to edit or download the created materials, restricting access for those with budget constraints.

After discussions with the client, it became clear that the AI-generated graphic package did not fully capture the restaurant's atmosphere. To achieve the desired outcome, it was necessary to manually refine the graphic elements, using AI as an initial foundation for further creative development.

### ***Graphics Pack 2: Step-by-Step***

To develop the graphic package, the process began with constructing a mood board using Gemini, rather than ChatGPT despite its higher survey mentions, to explore Gemini's capabilities and limitations. Gemini provided recommendations for hand-drawn illustrations,

colour palettes, text styles, and inspirational images. Additional research was conducted on similar projects through Behance (<https://www.behance.net/>) and Dribbble (<https://dribbble.com/>).

With visually compelling projects identified, a mood board was assembled in Figma (<https://www.figma.com/>) to capture the intended visual identity for Sandy's Diner. Following discussions with the client, elements from four restaurant projects were selected to inspire the final design.

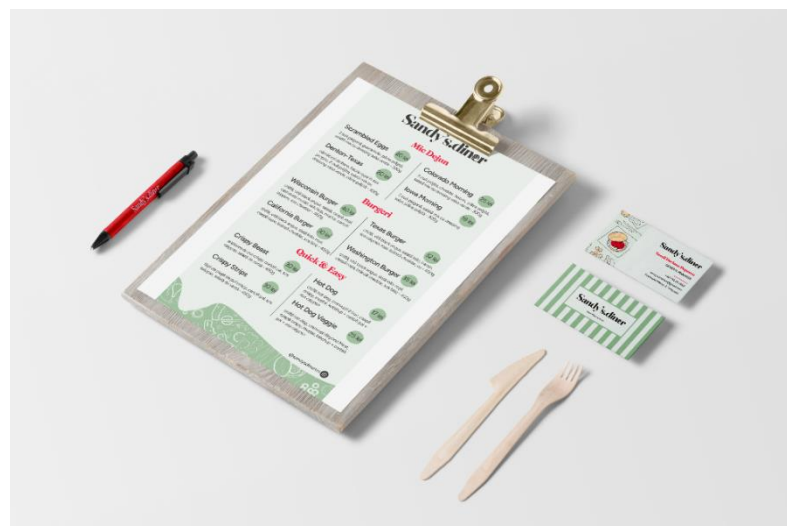


Fig. 7. Business cards and menu

Following client discussions and mood board creation, the process of generating graphic elements began with the business card. Despite the prevalence of digital interactions, business cards remain a valuable, tangible brand touchpoint. Two double-sided versions were created, simple yet impactful, featuring the logo, contact information, and address.

The client's existing slogan, *"Your place is here!"*, served as inspiration for creating context-specific adaptations. For instance, on packaging and paper liners, the slogan became *"Your food is here!"*,

emphasising the diner's culinary focus. This playful style extends to the paper cups, available in red and olive green, featuring a simple design with the logo and the adapted slogan "Your drink is here!".



Fig. 8. Packaging

To expand the brand identity, two recycled cotton tote bags were designed to align with the established visual identity and colour scheme. One tote features the original slogan, "Your place is here!", while the other playfully adapts it to "Your bag is here!" for an inviting touch. Both totes are accented with red or olive-green handles, reflecting Sandy's Diner's primary colours.



Fig. 9. Tote bags

Showcasing Sandy's Diner spirit, a unisex t-shirt design was created for both employees and brand enthusiasts. The design is clean and classic, with the logo prominently displayed on the front right side. The charm of the design lies in the playful reinterpretation of the slogan, cleverly integrated with the brand's signature fine line. This element, a key feature of the new visual identity, elegantly connects each word of the slogan, adding a touch of whimsy and reinforcing brand recognition.



Fig. 10. T-shirt

Following client discussions, a comprehensive set of graphic products was created to embody Sandy's Diner's new visual identity. The design features clean lines, a minimalist approach, and a carefully chosen colour scheme that evoke a modern and sophisticated feel, aimed at attracting a broader clientele.

The client was thrilled with the outcome, expressing gratitude for choosing Sandy's Diner as the project focus. They shared that being immersed in the restaurant's old identity on a daily basis had limited their vision. This project opened their eyes to new possibilities for Sandy's and its potential to truly flourish.

#### **Recommendations related to AI tools in the design process**

Sandy's Diner's new visual identity, characterised by clean lines and fine-line illustrations, presents exciting opportunities for AI design tools. However, AI should be seen as an enhancer rather than a replacement for human designers. When integrated strategically, AI streamlines workflows, sparks creative exploration, and ensures brand consistency, but human involvement is indispensable. AI aids the design process by providing creative prompts and maintaining consistency, but impactful design ultimately requires human vision. The most successful projects harness the strengths of both AI and human creativity.

While AI tools like uBrand can serve as a starting point, a human-centred design approach remains crucial to developing a truly impactful and strategic brand identity that distinguishes Sandy's Diner from the competition.

#### **4. Conclusions**

This study has found that designers recognise and embrace AI tools for their efficiency benefits, particularly appreciating AI's ability to spark creativity and automate repetitive tasks.

However, concerns about uniformity and the potential loss of creative control were also highlighted. The survey emphasises that while AI is a valuable tool, a human-centred approach is essential, maintaining

a balance between technology and human input. Designers expressed a need for more intuitive, customisable AI tools that seamlessly integrate into their workflows and adapt to their preferences.

This research contributes meaningfully in two key areas. Firstly, it enriches the scientific field by providing valuable insights into graphic designers' perceptions and needs concerning AI.

On a personal level, this study presented an invaluable opportunity to delve into an innovative field and actively contribute to its growth. Analysing designer experiences offered a deeper understanding of AI integration within creative processes.

Overall, the paper highlights AI's potential to transform graphic design while underlining the importance of human creativity.

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