Vol. 4 No. 1 (2026)

Liberal Journal of Language & Literature Review
Print ISSN: 3006-5887
Online ISSN: 3006-5895
https://llrjournal.com/index.php/11

A REVIEW OF INTEGRATION OF ARTIFICIAL INTELLIGENCE (AI) IN GRAPHIC DESIGN INDUSTRY: CHALLENGES AND OPPORTUNITIES

Mehwish Zubair*[1], Dr. Shazia Hashmat[2]

*[1]*MPhil Student, Communication and Media Studies Department, Fatima Jinnah Women University, Rawalpindi, Pakistan*
[2]Assistant Professor, Communication and Media Studies Department, Fatima Jinnah Women University, Rawalpindi, Pakistan.

Liberal Journal of Language & Literature Review
Print ISSN: 3006-5887
Online ISSN: 3006-5895

Abstract

The graphic design industry has radically changed due to the incorporation of Artificial Intelligence (AI), which makes the designer from creator to visual curator and co-creator. This paper provides a concrete analysis of AI influence on design processes. The review shows that AI tools offer extra flexibility and vision and deliver the best solution for improving creativity and productivity, efficiency, personalization, creating smart layouts, automating animation, video editing and UI/UX design jobs. AI is considered as collaborative tool in creativity and expression. The fast implementation of AI in design practices also bring serious challenges of authenticity, originality, and authorship of AI-generated content. The AI automated systems raise concerns about job displacement, privacy of users, algorithmic bias and plagiarism. The aim of this article is to examine the changes graphic design faces in the era of AI, their potential benefits, challenges, and ethical issues connected them. This study is based on the comprehensive literature review of 30 research publications guided by the PRISMA methodology. It is concluded that AI cannot replace the distinctive human capabilities of storytelling, creativeness, emotional brainpower and strategic intelligence. The future of graphic design will be AI-assisted creativity, where designers use AI for ideation and then polish them with personal intuition and artistic proficiency.

***Keywords**: Artificial Intelligence (AI), graphic design, automation, creativity, authorship.*

Introduction:

Graphic design is an art and practice of planning, projecting ideas and experiences; and solving problems with pictorial and textual content. It is a form of visual communication that uses images, sketches, typography, colour schemes, composition, and icons to deliver messages successfully to targeted audience and evoke emotions. Graphic design has seen momentous transformation over the last two decades with the dawn of Artificial Intelligence (AI) as a major constituent of the creative practice (Chatterjee, 2022).

The phrase 'Artificial Intelligence' was formally established in 1950s in demonstrating human cognition (Ting and Ling, 2022). They denote AI to applications that rely on deep biochemical brain networks. Artificial intelligence art refers to creatives made by relationship teamwork between AI algorithms and human artists. The Random House Kernerman Webster's Dictionary (2015) explains artificial intelligence as the estimation and evolution of computer systems to perform tasks usually require human astuteness, visual sensitivity, speech recognition, decision making, handwriting, spelling tasks and interpreting languages.

AI construct intelligent machines that automate mechanisms, make predictions, and improve executions by simulating the human capabilities of learning from the experiences. AI technologies comprise Machine Learning, Deep Learning, Natural Language Processing, Expert Systems, Speech and Vision Processing (Chopra, 2012).

Graphics design function has exceeded from aesthetics to successful communication and business strategy. Well-designed websites capture the audiences' interest through information flow in vivid and engaging way (Green & Harris, 2022). Posts in social media with eye catching images receives more likes and comments, which enhances visitors' engagement and interaction. Products on physical store shelves with attractive packaging graphics design makes the products stand out, as well as in virtual e-commerce platforms (Green & Harris, 2022). Artificial intelligence augments task optimization through pattern recognition algorithms that provides original and innovative designs (Narzisi & Passerini, 2019). In 2024, 65% companies are using Gen AI in their workflows (McKinsey & Company, 2024).

In the digital age of AI, the daily work of graphic designers is undergoing revolutionary changes impacting everything from conceptual thinking to visual expression (Y.K.Dwivedi et al., 2021). Traditional design

methods no longer meet people's current needs. With AI technology support, graphic designers can accurately predict user demands and comprehend their preferences, creating personalized and appealing visual works (ReineckeK et al., 2014).

AI has brought dramatic changes in two-dimensional graphic visual designs like posters, digital artwork, branding, and social media updates (Gu et al., 2023). AI plays a significant part in idea discovery, visual reference browsing, digital sketching, and design completion (Yang & Lee, 2020). AI tools Canva Magic Studio, Midjourney, Dall-E, and ChatGPT have fast-tracked the design process and amplified the opportunities of visual creativity (Rantanen, 2024). Along with these conveniences, new challenges have emerged particularly concerning originality, ethical considerations in production, algorithmic bias and the re-evaluation of the designer's role within the creative process (Wingström et al., 2024). AI overlooks and misrepresent traditions and values and produce culturally insensitive and inappropriate designs. Some experts have the opinion that AI in graphic design is leading to a loss of human touch and possible replacement of human graphic designers (Mustafa, 2023). Designers need the ability to work with AI and must redefine their occupations with a focus on creative thinking and user experience by using data analytics and user feedback.

This paper aims to explore the potential benefits, ethical implications and challenges caused by AI-generated art in the graphic design industry. By discovering the trending technologies of AI, we can promote a future where AI is used ethically and inspiring the creative process without declining the worth of human designers.

1.1. Problem Statement

Graphic designers take long time to conceive ideas through constant brainstorming. The rapid advancement of artificial intelligence (AI) is transforming the graphic design industry by introducing innovative tools for automation, enhancing efficiency and productivity, user-experience analysis and expanding creative possibilities. AI makes flawless images, but people desire natural and spontaneous flashes. gettyimages (2023) discloses that 72% customers prefer brands that use realistic photos over polished-studio style snapshots. The rapid incorporation of AI in the graphic design industry brings several challenges along with its opportunities. Graphic designer's express concerns about the impact of AI on their creative autonomy, deepfake, employment insecurity, data privacy and skill relevance to effectively utilize AI-based systems. Ethical issues regarding originality, plagiarism, algorithmic bias, and proprietorship of AI-generated designs are still unsolved. There is an urgent need to investigate the ways of AI adoption in the graphic design profession, particularly in balancing human creativity with machine-generated designs.

This research analyses the challenges and opportunities associated with this technological shift of AI incorporation in graphic design to inform future practices, policies, and educational strategies. This study aims to look at several research articles for a unified analysis and gives a methodical and synthesized review.

1.2. Research Objectives

O_1: To assess the transformation and opportunities that AI offers for innovation in graphic design

O_2: To explore the ethical implications, copyrights and originality concerns related to AI-generated creativity and authorship

O_3: To evaluate the role of AI in enriching imagination, efficiency and personalized designs

O_4: To examine the general attitudes and insights of designers towards AI as a tool in their profession

1.3. Research Questions

RQ_1: How is Artificial Intelligence currently being incorporated into the graphic design industry?

RQ_2: What are the major challenges and limitations AI tools and technologies are creating for the graphic designers?

RQ_3: What prospects AI offers in enhancing creativity, productivity and efficiency in graphic design?

RQ_4: How graphic designers identify AI as an encouraging tool versus a menace to their careers?

2. Methodology

This systematic review used logical reasoning to analyse empirical, conceptual and review-based research articles published from 2019 to 2025 as methodological approach. It closely observes the ongoing trends and complexities in the field. Qualitative, quantitative, mix method and systematic review studies are included for the research.

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Table 1: Inclusion and Exclusion Criteria of Study Literature

Inclusion Criteria	Exclusion Criteria
Studies focussing on AI challenges in Graphic design industry like job displacement and skill gaps, ethical issues, loss of creative authenticity, plagiarism, algorithmic bias, violation of intellectually property rights.	Studies that have invalid/irrelevant themes.
Studies addressing the opportunities AI offers like automation, enhanced creativity, personalization, brand design and user experience analysis, real-time collaboration.	Articles out of scope of study.
Articles indexed from one database.	Articles found duplicate in other databases.
English language publications.	Non-English publications.
Articles downloaded with complete research.	Abstract only articles.

2.1. PRISMA Flow Chart

A PRISMA flowchart is a graphical method of the way researchers choose, screen, and incorporate articles in their study. It helps make the process flawless and proves that the research has been carried out vigilantly and systematically.

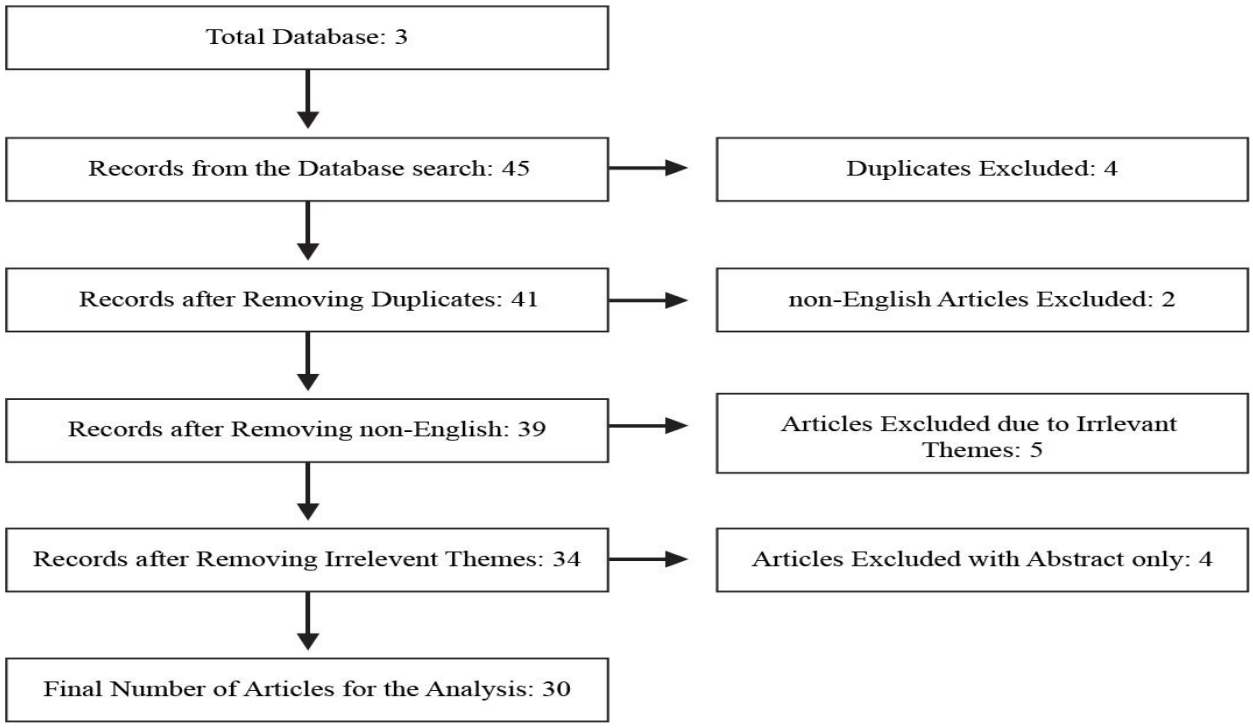

Table 2 shows the percentage of articles selected from database. Mostly articles are selected from Google Scholar (n=19), Research Gate (n=7) and Scispace (n=4). The duplicate articles (n=4) and non-English language articles (n=2) were excluded.

The articles that address AI implementation in other industries; irrelevant themes (n=5) and abstract-only (n=4) were excluded. Table 3 shows that article (n=1) is published after 2016, and articles (n=29) are published 2020 onwards. The purpose is to do analysis of recent trends and publications of AI in Graphic design market.

Table 4 suggest in terms of research methods, studies (n=10) used Qualitative approach, findings (n=3) used Quantitative approach and studies (n=17) are systematic reviews. In the end (n=30) articles are screened for final systematic review.

Table 5 suggest according to their designs, the numbers and percentages of the literature, most studies (11) were based on a review approach, while (3) studies used survey design, (9) studies used an interview approach and some studies (7) used case study.

Table 2: Numbers and Percentages of Literature According to their Database

Database	Number	%
Google Scholar	19	64%
Research Gate	7	23%
Scispace	4	13%

Table 3: Numbers and Percentages of Literature According to the Publication Year

Year	Number	%
2016-2020	1	3%
2021-2025	29	93%

Table 4: Numbers and Percentages of Literature According to the Paradigm Model

Paradigm Model	Qualitative	Quantitative	Systematic Review
	10 (33%)	3 (10%)	17 (57%)

Table 5: Frequencies of Literature According to Data Collection Approaches

Data Gathering Approaches	Survey Methods	Interviews	Review	Other
	3	9	11	7

2.2. Validation of Selected Methodology

The methodology used to conduct this study is intricately checked to make sure it is reliable and covers everything needed. Here are main steps taken to validate it.

2.3. Adherence to PRISMA Guidelines

PRISMA guidelines are a set of rules that help researchers to collect, analyse and report information for systematic review. The analytical process is unbiased, reliable, and transparent to provide evidence for practice.

2.4. Inclusion and Exclusion Criteria

The criterion for this study is designed to select those articles that focussed on the key challenges and opportunities after the integration of AI in the Graphic design industry.

2.5. Search Strategy

The study preferred three specialized platforms for articles selection: Google Scholar, Research Gate and Scispace. The right keywords were picked to ensure that important studies are collected.

3. Data Tabulation

We used Microsoft Excel to consolidate the data collected from the selected articles. This helped us in calculating frequencies and percentages.

Table 6: Grid of Selected Studies

Database	Title	Author
Google Scholar	Using AI to personalize emotionally appealing advertisement	Emmanuel Mogaji, Sunday Olaleye and and Dandison Ukpabi
Google Scholar	Artificial intelligence in graphic design Processes: The Impact analysis and Challenges	Suhaib Sultan Alkahteeb, Islam Ghandi Almomani, Mohammad Kamal Zoubi, Mustafa Mohammad Issa, Mohammad Ali Al Smadi, Haytham Atef Jaradat,

		Taghreed Mohammad, Abualhumos
Google Scholar	The application of artificial intelligence in graphic design: Opportunities, challenges and ethical considerations	Dragana Knežević
Google Scholar	The evolving field of graphic design: Challenges and opportunities in the integration of artificial intelligence	Hanni Fadhilatul Rosyida, Ahmad Syafei, Muhammad Ulin Nuha
Google Scholar	Challenges faced by graphic designers in developing brand communication within the realm of Artificial Intelligence	Dhiya' Zielfita Munzier, Muhammad Akbar, Alem Febri Sonni, Irwanto Irwanto
Google Scholar	Destroy all humans: The dematerialization of the designer in an age of automation and its impact on graphic design—A literature Review	Benjamin Matthews, Barrie Shannon and Mark Roxburgh
Google Scholar	Ethical dimensions of artificial intelligence in graphic design: Challenges, opportunities and the future of creative practice	Sandra Dedijer, Nemanja Kašiković, Magdolna Pál, Ivana Jurič, Živko Pavlović, Saša Petrović, Gala Golubović
Google Scholar	What's next? Exploring utilization, challenges, and future directions of AI-generated image tools in graphic design	Yuying Tang, Mariana Ciancia, Zhigang Wang, Ze Gao
Google Scholar	The future of graphic design in the age of generative AI: Its impact on creativity and industry	Dr. Noura Alotaibi
Google Scholar	Graphic design and artificial intelligence: Interdisciplinary challenges for designers in the search for research collaboration	Yaron Meron
Google Scholar	Graphic design in responsible Artificial Intelligence	Grafik Tasarımda Sorumlu1Yapay Zeka
Google Scholar	The impact of artificial intelligence on the graphic design job market: An analysis of the evolution and opportunities of the designer role	Linlu Cai, Euitay Jung
Google Scholar	Artificial intelligence in graphic design identifying benefits, challenges, and ethical considerations	Habiba Elgendy
Google Scholar	The impact of artificial intelligence on graphic design processes and outcomes	Felix Onaiwu Osaigbovo, Izogie Collins Ogieva
Google Scholar	Investigating into how artificial intelligence is transforming the graphic design industry	Deem A. Alshammary
Google Scholar	Revolutionizing graphic design: The synergy of AI tools and human creativity	Jamshedpur, Subrato Das
Google Scholar	The impact of the development of Artificial Intelligence on computer graphic design	Lusine Petrosyan
Google Scholar	Unveiling graphic design and AI: replacement of the human mind?	Farah Zafar
Google Scholar	AI and visual communication: Transforming design, media and Interaction	Sabiha Khan
Research Gate	Prospective of graphic design in the age of artificial intelligence	Isabel Salinas Gutiérrez

Research Gate	Artificial intelligence in graphic design	Ivana Tomić, Sandra Dedijer, Ivana Jurič Savka Adamovic
Research Gate	Ethical considerations of AI-Generated art in the graphic design industry	Emmanuel Ok, Joel Emmanuel, Godwin Olaoye
Research Gate	The impact of artificial intelligence on the graphic design industry	Bahaa Mustafa
Research Gate	The influence of AI and automation on modern graphic design	Amen Alebachew
Research Gate	The impact of artificial intelligence on the evolution of graphic design: Current practices and challenges	ShengDong Zhou, Eakachat Joneuraratana, Veerawat Sirvesmas and Pairoj Jamuni
Research Gate	The influence of AI-generated illustrations on traditional graphic design practices	Emmanuel Ok, John Owen, Mathew Fred
Scispace	Artificial intelligence, transformation and expectations in graphic design processes	Mehmet Akif ÖZDAL
Scispace	Artificial Intelligence and design: Innovation, practical applications, and future creative horizons	Salvatore Di Dio, Benedetto Inzerillo, Francesco Monterosso, Samuele Morvillo, and Dario Russo
Scispace	The use of generative graphics in graphic design: Aesthetics and ethics	Daria Kutanova
Scispace	Trends of use of artificial intelligence in graphic design	Diana Buryk

4. Review of Selected Literature

All the themes discussed below are related to the research questions and examine the different aspects of the topic to give a broad understanding.

4.1. The Transformative Role of AI in Graphic Design

The adoption of AI in graphic design has revolutionized the industry by providing innovative tools for ideation to augment creativity and enhance speed. Designers can concentrate on multifaceted and creative aspects of their work. In visual communication AI can assist design in delivering information more clearly and promote personalized solutions.

4.1a. Theme 1: Automating Repetitive Tasks

The assimilation of AI into graphic design considerably transforms the conventional processes of concept invention, automatic editing, and workflow optimisation. It increases the productivity and efficiency of designers as they can focus on creative and strategic aspects of their work and complete tasks quickly and with less errors. AI is automating the repetitive machine jobs like image processing, retouching, and colour grading. Traditionally, these processes required significant time and labour resources from designers (Qiu T, 2024). ArtroomAI, Craiyon, Artiso, Autodraw and Deep Dream Generator create unique art and turn ordinary images into surreal, dreamlike creations. Ameela and Clipdrop are logo generators and make professional visuals, Cascadeur produce realistic 3D animations (Elgendy, 2024).

Table 7: Insights into Automating Repetitive Tasks

Theme	Key Points	References
Automatic color palette generation	'Colormind' utilize Deep Learning technology to generate pleasant colour palettes and styles from popular artworks and movies.	(Colormind, 2024)

Fast Image generation	70,000 companies and 1.5 million people use Dall- E,4 a Generative AI tool to produce 2 million visuals daily and automate the text and image content. It creates novel images in artistic styles and scenarios.	(Noor and Bondarchuk, 2023)
Artistic visual effects	Artbreeder and Neural style transfer algorithms allow designers to apply artistic and unique styles on their photos.	(Mao Y, 2023)
Automate workflows	TimeHero is a robot which manages task scheduling, performance monitoring, and speedup team processes.	(Jiang J. 2024)
Producing high-quality illustrations	Stable Diffusion, DALL·E and MidJourney permit designers to invent high-quality illustrations from basic textual prompts. They have revolutionized the design ideation and implementation.	(Alebachew, 2025)
Auto-reframing	Auto-reframing orientates the sizes of pictures and videos for various social media plans.	(Zafar, 2024)
Scene-stitching	It involves taking several photographs of the same scene and merge them into single seamless photograph.	(Zafar, 2024)
Auto-sorting assets	Adobe Sensei is auto-tagging pictures, smart font pairing, extract background, and facial detection editing.	(Alebachew, 2025)
Video automation	Runway ML, Synthesia, and Pika Labs are mechanizing video editing, creating convincing digital avatars, making animations. They create hyper-realistic advertising and film CGI upshots.	(Alebachew, 2025)

4.1 b. Theme 2: Enhanced Innovativeness and Efficiency

Advertising companies are trusting on generative AI to create new outputs that facilitate marketing operations. Graphic designers are exploring innovative concepts from textual prompts, getting insights based on datasets, animated infographics, dynamic websites, predict trends and brainstorming new ideas. The AI video generation tools like Sora, Topaz video, Munch, VREW create captions, making quick cuts, realistic, intuitive and imaginative videos from text prompts. Vidnoz are online video generators that has more than 100 AI voices, 50 realistic AI avatars, 70 video templates, and a huge stock library of prepared media materials (Elgendy, 2024). It produces professional videos within a few minutes.

Descript records transcribe videos and podcasts through AI (Elgendy, 2024). Dreamlike.art and DreamStudio produce spectacular graphics from text prompts using Stable Diffusion AI model. Leonardo creates production quality visual materials of creative tasks with AI-driven speed and ensure consistency of style. User can generate their websites in minutes through Framer, which is an innovative web design AI tool. Nvidia Canvas is an AI-powered drawing tool which turns brush strokes into realistic landscapes and speedup concept exploration, so that designers spend more time in visualizing ideas. Doodle Morph App transforms basic doodles into photo-realistic art (Elgendy, 2024).

Table 8: Insights into Enhanced Innovativeness and Efficiency

Theme	Key Points	References
Rapid prototyping and ideation	Dall-E enrich generation of mock-ups, turn drafts and trial design aesthetics and functionality before being finalized. AI generate variety of concepts based on user prompts for different scenarios. It intensifies pace of design activities.	(Elgendy, 2024)

Innovative web designs	Canva builds professional and dynamic websites in line with modern layouts and user expectations with great conversion rates.	Alkahteeb et al. (2025)
Animation	DeepMotion is making animations, editing actions of character, and Runway ML is adding effects without necessarily polish each frame physically and saves time.	(Kutanova, 2025)
3D models	DreamFusion is opening new prospects in games application for the creation of 3D models and intricate virtual scenes based on textual prompts.	(Kutanova, 2025)
Analyze color preferences	AI-tool Khroma, analyses the color preferences of users and creates endless palettes that can be saved.	(Khroma, 2024)
Swift branding	Adobe Firefly is enhancing efficiency in commercial design projects for instant logo design and branding components.	(Sudarmanto JA, 2025)
Graphic style artistic visuals	Pixlr provides intuitive interface and creating cartoon-like artistic, graphic stylized images for projects that demand artistic, illustrative visuals with several variations that user choose according to his needs.	(Knežević, 2025)
Instant Logo creation	Looka's and Wix AI system produces multiple logo options in real-time, creating a fast and economical means of building brand identity.	Alkahteeb et al. (2025)
Photo-realistic image creation	Generative AI applications like MidJourney, Dall-E and Deep Dream generate highly detailed, realistic and abstract images using a few word prompts. These tools have been broadly using in advertisement, branding and social media advertising.	(Alebachew, 2025)

4.1 c. Theme 3: Personalized and Adaptive Designs

AI has been designing specific designs that suits the needs of particular users making the designs functional and efficient. It helps to improve the user experience and can lead to increased consumer gratification and loyalty. AI-based systems have the capacity of examining visual patterns and user preferences to optimize layout structures and help users in achieving aesthetically coherent outcomes. Lalaland is a business marketing AI tool which allows digital designers to create unique avatars and realistic models to enrich product designs. Ziflow, an online proofing software, it improves creative workflows, manage reviews and approval process in business marketing through centralized platform.

Table 9: Insights on Personalized and Adaptive Designs

Theme	Key Points	References
Customized themes	AI create personalized templates, recommends color schemes and forms of design that suits their needs. AI enhances user experience by use of adaptive interface functionality resulting in more accurate design experiences.	(Sashidharan, 2024)
Personalized designs	AI examine demographics, browsing record, purchase history and user favorite color and layout. Artists create engaging designs for their specific audience.	(Mustafa, 2023)
Meticulous designs	MidJourney create artistic styles images and abstract themes from textual prompts and transforms them into intricate visual depictions to assist in visual storytelling.	(Knežević, 2025)
Website usability	EyeQuant is predicting people reactions towards websites and digital designs through machine learning, neuroscience	(Eyequant, 2018)

	research and eye-tracking technology. EyeQuant uses AI eye-tracking technology to predicted banner advert suitability that efficiently grab people's attention.	
Branding and marketing	AI enables designers to identify patterns and trends in data, and guides to take better strategic design decisions required for branding and successful marketing campaigns.	(Lee and Cho, 2020)
Instant website designs	The Wix, Grid, Squarespace are AI tools, they create websites quickly. The users can upload pictures and text and choose among the variety of colour combination and design variety to make picture-pleasing sites with not many steps.	(Osaigbovo & Ogieva, 2024)
Analysis of marketing campaigns	Bidalgo uses image and video recognition technology to analyze every module of advertiser's creative down to each pixel drive campaign goals. Creative AI uses Bidalgo's proprietary AI-based algorithms to break down the DNA of successful ad creatives by analyzing dozens of variables including images, colors, promotions, contrast, concepts, copy.	(Takahashi, 2018)

4.1 d. Theme 4: Real-time Collaboration

With the integration of machine learning algorithms, user behaviour and design trends can now be analysed to facilitate the efficient exploration of novel visual solutions (R. T. Hughes, 2021). AI predict users' visual interactions and enhance the emotional expression capabilities of design works. Marketing companies are creating consistent ads campaigns through Clickable and Contlo AI apps and track their performance with powerful analytics. Users can create headers, create text copies for email and get insights of schedule campaigns. Graphy is an AI free chart-maker tool that allows clients to create sophisticated and interactive data visualizations (Elgendy, 2024).

Table 10: Insights into Real-time Collaboration

Theme	Key Points	References
Context aware feedback and iterations	Real-time suggestions enable the designers to accelerate the design iteration process and adds finer details of their projects on the spot. This immediate feedback guarantees the perpetual touch and increased quality output.	(Sashidharan, 2024)
Integration with augmented and virtual reality (AR/VR)	Artists are live translating drawings into interactive AR models for realistic and adaptive simulated environments through ARKit. AI enhances real-time recognition and interaction of objects.	(Sashidharan, 2024; Crawford, 2024)
Real-time optimization of marketing strategies	AI use analytics and behavioral facts for quick testing of various advertisements options and determine the most successful ones. AI augment marketing strategies and increase business revenue.	(Yan H, 2023)

4.1 e. Theme 5: User Interface and Experience Analysis

The AI-driven design tools like Uizard and Fronty make design decisions more scientific and precise. Modern UI/UX is based on voice user interfaces (VUIs), augmented reality (AR), and personalized user experience. They reduce the subjectivity of designers in making decisions based on personal experience and intuition.

Through AI's data analysis, designers can improve the effectiveness of the design that meets market trends and user expectations. The AI-driven insights are moving the industry to hyper-personalization, in which designers create smooth, adaptable and user-friendly interfaces. The UI/UX design tools like Diagram, Luny, UX Magic, UI Magic create stunning user interface and responsive landing pages and websites from plain text in seconds through AI (Elgendy, 2024). Galelio AI create complex UI designs with natural language input and edit designs with an intuitive interface.

Table 11: Insights on User Interface and Experience Analysis

Theme	Key Points	References
Optimize interface design	Adobe Sensei recognize user preferences and behaviors through clicks, dwell time and scrolling patterns and aids designers optimize navigation and graphical interface design.	(Cai & Jung, 2024)
Accessibility considerations	AI dialog recognition and assistive design qualities enable designers with optical impairments or physical disabilities to comprehend the design strategies.	(ShengDong, 2025)
Improvised UX	AI UX design qualities enhance the accessibility options by automatic contrast and legibility adjustments, reduce development time by 40%.	(Alebachew, 2025)
Immersive narrative scenarios	AI smooths the construction of visual chronicles in user interfaces and interactive model creation and enhance the whole product or service experience.	(Meron, 2022)
AI as assisted design tool	Adobe Sensei, Canva's Magic Resize and Autodesk's Dreamcatcher increase creativity of designers in logo design, web design, user interface design and in the creation of advertising campaigns.	(Satrinia et al., 2023)

4.2. Challenges

AI offers a novel aesthetic experience; it also produces potential risks and ethical dimensions and vulnerabilities. The regression in technical skills and the emphasis on AI production in terms of concepts and inspiration brings specific creativity and originality problems. AI technology needs significant investment in hardware, software and human resources. Individual graphic designers and small businesses cannot afford this expensive technology. AI can be employed for malicious purposes like spreading fake information or propaganda.

4.2a. Theme 6: Loss of Creative Originality

John Dewey and other philosophers' stresses that art is human expression, very much interconnected with human civilisation and experience (Jiang et al., 2023). The style of an artist emerges from unique personal experiences, feelings, and interactions with different cultures. AI image generators lack the human intelligence, strategic thinking and the unique artistic touch. AI mimic the styles of other artists, it lacks the experience and cultural legacy necessary for authentic imaginative expression.

Table 12: Insights on Loss of Creative Originality

Theme	Key Points	References
AI-art is imitated	Human art reveals individual sensitive expressions, AI-generated art has m4echanically reproduced emotions.	(Kutanova, 2025)
Lacks intuition	UI/UX tasks such as prototyping and analysis are robotized by AI but it lacks the instinct and emotional understanding of for human-focused design.	(ShengDong, 2025)

Templated results	AI has limited potential for producing distinctive designs to complement brand's identity and it frequently deliver more generic or templated results.	(Wang WF, 2025) (Liu Q. 2024)
AI lacks human touch	Hong and Curran conducted an experiment with 288 participants and discovered that human-created artworks have better sense of "composition," "level of expression," and "artistic value".	(Cetinic & She, 2021)
Generic and repetitive visuals	Optical aesthetics of Midjourney designs have "illustrative fantastical" illusion which does not affiliate with designer's peculiar style.	(Elgendy, 2024)
Homogenization in design	AI systems utilize the same datasets and algorithms which constraint the variation and uniqueness in their results.	(Dedijer et al., 2025)
Reduce craftsmanship and design skills	Designers become excessively dependent on robotic tools. AI-art could change the focus from hand-drawn sketch, color model and composition mastery.	(Ok et al., 2025)

4.2 b. Theme 7: Employment Insecurity

The World Economic Forum (WEF) produces its future of Jobs report in 2025 which declares that graphic design is one of the jobs most threatened by AI. This report is based on interviews with 1,000 employers, who represent more than 14 million workers in 55 countries. It reveals Graphic design is the 11th fastest declining job, based on the employers' predictions. The WEF got a tweet by Open AI boss Sam Altman "Soon AI will be able to do all that only very talented human do nowadays."

Table 13: Insights on Employment Insecurity

Theme	Key Points	References
AI literacy	Designers need to constantly improve their abilities and proficiency in new AI technologies and interdisciplinary comprehensive knowledge.	(Cai & Jung, 2024)
Job losses	Junior designer's positions will be replaceable by automated systems. Designers who will not adapt AI scientific trainings, will be at risk.	(Ok et al., 2025)
Programming skills	Designers when making a website or app need to learn optimization of user interface and collaboration design through AI data analytics. This emerging talent requirement grows career hurdles for designers.	(Cai & Jung, 2024)
Degradation of human worth	AI devalue human labor as it automates many routine design tasks like the ability to create numerous variations in designs and images through algorithms.	(Jiang et al., 2023, Li et al., 2024)
AI as competitor	AI tools quickly produce designs that meet industry criteria, there is an increasing fear that businesses organizations will prefer these tools cheaper and faster substitute to signing human designers.	(Ok et al., 2025)

Skill bias	Labor economists often comment that automation technologies typically distress employees with lower expertise levels the most. This phenomenon is known as skill bias.	(McKinsey & Company (2023

4.2 c. Theme 8: Algorithmic Bias and Stereotypes

One of the long-lasting moral problems in digital content and graphic design is algorithmic bias. Algorithmic biases are reflected in their output when the algorithms used in machine learning models have inherent prejudices. People operating artificial intelligence systems deliberately or unintentionally introduce their own biases into the system.

Table 14: Insights on Algorithmic Bias and Stereotypes

Theme	Key Points	References
Fairness and authenticity	AI models are mostly trained on Western visual styles. They do not give attention to non-Western creative traditions and do not reflect ethnic diversity.	(Dedijer et al., 2025)
Biasness in image recognition and content generation	The datasets are not diverse enough, the algorithms propagate the existing biases and creates visual representations that deficit inclusivity and marginalize some ethnic groups.	(Crawford, 2024)
Bias through stock photos	Without informing users about the presence of inherent biases, stock image websites are incorporating AI tools.	(Chuan et al., 2023; 2024; Samuel, 2022)
Gender stereotypes	ChatGPT is showing prejudice against marginalized groups and DALL-E is over-representing light-skinned persons and spread gender stereotypes in images.	(Chuan et al., 2023; 2024; Samuel, 2022)
Hallucination	GenAI models often produce offensive outputs due to probabilistic algorithms, that leads to blunders and nonsensical outcome known as “hallucination”.	(Feuerriegel et al., 2024)
Creating harmful images	Child abuse and pornographic images have been created from Deepfake and unsupervised AI-supported visual design apps.	(Şen Atiker, 2024)
Racial stereotypes	The text-to-image AI models Stable Diffusion, OpenAI's DALL-E, and Midjourney, demonstrated racial and stereotypical biases in their outputs. In one study, only male figures are created for word doctor. In another study, the scientist is associated only with male figures.	(Nicoletti & Bass, 2023)

4.2 d. Theme 9: Authorship and Copyrights Issues

In Generative design, artwork is a joint creation of human and AI, designer comes up with an idea, and AI serves as the technical implementer. This raises debates about who should be considered the end author of the work (Cetinic & She, 2021). The databases on which artificial intelligence is fed and trained consist of the works of designers and artists. These works are taken from portfolio sites (behance, driible, artstation.com) or personal websites without permission. These training datasets are composed online automatically, often without the permission of the original authors.

Table 15: Insights on Authorship and Copyrights Issues

Theme	Key Points	References
Designer as curator	Designer cooperating with algorithm can become curator by managing the thought process and ultimate result.	(Kutanova, 2025)
Plagiarism	Algorithms have the potential to recreate existing artworks triggering the accusation of plagiarism and copyright infringement.	(MIT Technology Review Insights, 2023; Jiang et al., 2023)
Privacy breach	AI systems can use vulnerable data to produce answers for other people without the author's consent.	(Elgendy, 2024)
Deepfake	Threats of AI, Deepfake can do facial substitutions, voice replication, synthesized facial expressions and speech are a substantial ethical concern.	(Elgendy, 2024)
Deepfake spread misinformation	Deepfake deceive through privacy breach, identity theft, defamation, blackmail and cyber harassment. It can generate fraudulent content which becomes difficult to differentiate from real media.	2025)

4.2 e. Theme 10: Technological Divide

Smaller design studios and individual designers from economically disadvantaged locations have restricted internet access and financial obstacles in obtaining these advanced and sophisticated technologies. It constrains their competitiveness in the global market.

Table 16: Insights into Technological Divide

Theme	Key Points	References
Capitalization of AI tools	The commercialization of AI tools deepens the disparity between large corporate companies and low budget firms.	(Mustafa B., 2023)
Regional inequities	The affluent nations succeed in AI-assisted enterprise domain while designers from economically underprivileged areas are left behind.	(ShengDong, 2025)
Marginalization	AI disregard non-technical designers from areas where access to modern education in AI tools is constrained.	(Muji S, 2023)

4.2 f. Theme 11: Environmental Impact

Large data centres process powerful data for training advanced AI systems that runs around the clock and badly affect the environment. The power consumption that is associated with AI training depends on the complexity of the model, the size of the dataset, and the capabilities of the equipment (Ok et al., 2025).

Table 17: Insights into Environmental Impact

Theme	Key Points	References
Carbon emission	The AI systems utilize enormous amount of electricity to execute the multifaceted calculations to train AI models and emit high carbon footprint.	(Ok et al., 2025)
Traditional art is fuel-efficient	Manual techniques of hand-drawing, painting consume less energy in production and discarding of physical materials (paper, paints, or tools). These expenses are much lesser from training AI models.	(Ok et al., 2025)

5. Discussion and Conclusion

AI has made creative processes much more efficient. It has the ability to automate routine tasks, create various design options and present new concepts. The AI-created content has been normalized as one of the components of the design process. Designers, developers and policymakers need to work together to develop clear guidelines and initiate legal frameworks to promote transparency, safeguard intellectual property in a manner that AI is used responsibly.

Some firms have developed AI transparency watermarks to distinguish between machine produced media and human produced media. With the further advancements of the application of AI-generated imagery, people will need to be more aware of such content, and a higher level of transparency regarding AI models will become a mandatory practice (Knežević, 2025). Adobe has also launched Content Credentials on rights protection of authors. Content Credentials incorporate extra data onto content on export or download. They are encoded within an encrypted metadata block which includes every time the content is distributed (Adobe, 2024). Generative design and machine learning allow optimised and personalised solutions and makes designers act as the mediator between algorithmic accuracy and human desires (Di Dio et al., 2024).

The human-centred approach will be necessary to retain the artistic integrity and maximize innovation and efficiency in graphic design. To make AI-generated content represent a whole variety of cultures, identities, and experiences, designers will be forced to actively correct any algorithmic biases that may emerge in this type of content.

AI has emerged as a transformative force in the creative industry which inspires new potentials while raising critical ethical and legal challenges. Creativity has been linked with technology through new career opportunities. They are AI Trainers, Data Curators, AI Design Strategist and Generative Design Specialists, which are becoming more important to the design sector (Cui M, 2022). The requirement of designers who are both creative and technical has grown, as AI tools continue to evolve which demonstrate the growing trend of design and AI technology (Turker O, 2025). Clear algorithms, equitable data management, inclusiveness, protection of privacy and intellectual property are critical in instilling confidence in AI based design tools (Dedijer et al., 2025).

AI prompts the designers to improve their abilities in planning, problem-solving, project management, negotiation and understand virtual communities and digital marketing to stay aggressive in an AI-driven industry (Salinas Gutiérrez, 2024). AI in graphic design is more closely unified with virtual and augmented reality technologies, will result in more immersive and interactive design experiences. Graphic designers are put in a twofold situation of being imaginative designers and moral watchdogs. They are charged with the responsibility of creating brand stories which are appealing and also affiliated with ethical principles. AI is not to replace, but a futuristic development tool and should be viewed as speeding development, experiment, and pushing the limits of creativity in the workflow of polish designers. A co-operative solution, in which human intuition, empathy and storytelling with AI speed, scalability and data analysis will define the future of visual communication.

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