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THE ROLE OF ARTIFICIAL INTELLIGENCE IN CREATING INTERIOR DESIGN PROJECTS

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Abstract: Artificial Intelligence (AI) has become an innovative technology that significantly influences the field of interior design. AI-powered tools assist designers in generating design concepts, optimizing space planning, selecting materials, and producing realistic visualizations in a shorter period of time. This paper examines the role of artificial intelligence in the creation of interior design projects, highlighting its advantages, practical applications, and current limitations.

Keywords: Artificial Intelligence, Interior Design, Generative AI, Space Planning, Interior Visualization, Design Technology.

Introduction

The rapid development of digital technologies has transformed almost every creative industry, including architecture and interior design. Artificial Intelligence (AI) has become one of the most influential technologies by providing designers with intelligent solutions for planning, visualization, and decision-making. Unlike traditional software, AI systems can analyze user requirements, generate multiple design alternatives, recommend materials, and optimize layouts automatically.

Interior design is a multidisciplinary field that combines functionality, aesthetics, ergonomics, and user comfort. Developing an interior project traditionally requires considerable time for concept creation, technical drawings, and visualization. Today, AI significantly accelerates these processes while maintaining high-quality design outcomes.

The objective of this study is to analyze the role of artificial intelligence in interior design projects and evaluate its impact on the efficiency, creativity, and quality of design solutions.

The Role of Artificial Intelligence in Interior Design. Artificial intelligence contributes to every stage of the interior design process. During the conceptual phase, AI systems generate multiple design alternatives from simple text prompts or reference images. These alternatives help designers explore different styles, layouts, and color combinations without spending excessive time on manual sketching.

AI also improves space planning by analyzing room dimensions and suggesting optimal furniture placement according to ergonomic standards. Such automated recommendations reduce design errors while improving functionality.



Figure 1. Interior design generated with the assistance of artificial intelligence.

Another important application of AI is photorealistic visualization. Modern AI platforms such as Midjourney, DALL·E, Interior AI, Planner 5D AI, and Homestyler AI produce highly realistic interior renderings within minutes. This allows clients to understand the proposed design before construction begins, reducing misunderstandings and revision costs.

Furthermore, AI assists in material and color selection by analyzing harmony between textures, lighting conditions, and user preferences. Machine learning algorithms can recommend personalized interior styles based on previous design data and customer behavior.

Advantages and Challenges. The implementation of artificial intelligence provides numerous advantages. It increases design efficiency, reduces project development time, improves visualization quality, and supports data-driven decision-making. AI enables designers to produce several alternatives within minutes, allowing clients to compare different concepts before selecting the final solution.

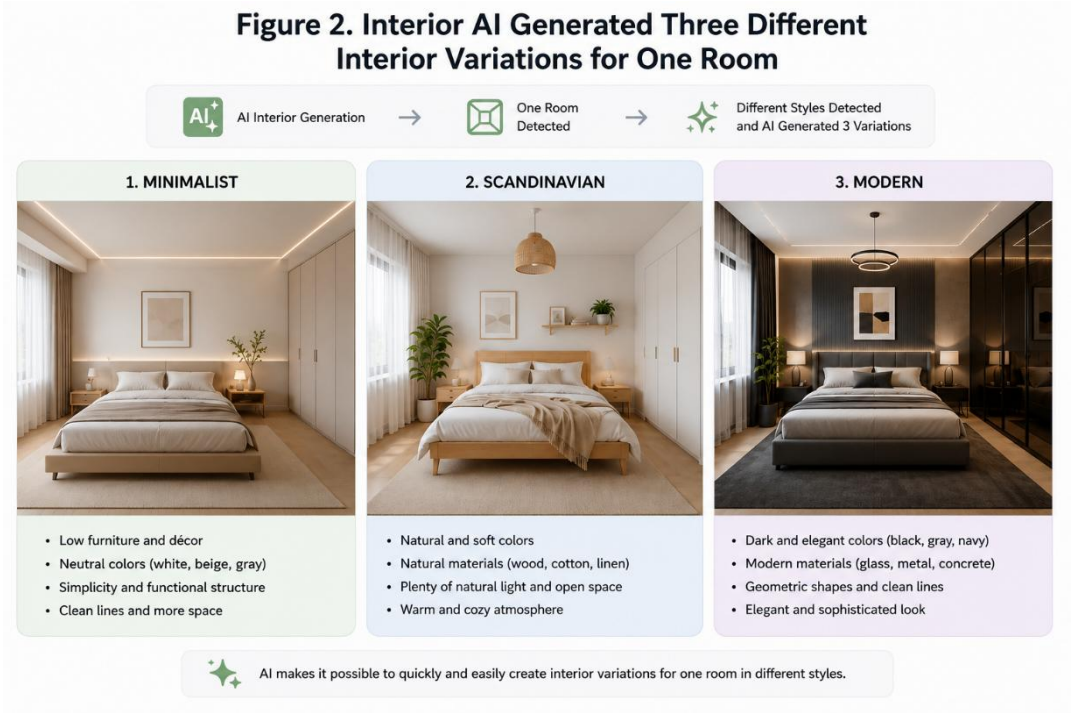


Figure 2. AI Software Interface Generating Different Interior Design Concepts

Moreover, AI enhances collaboration between designers and clients by simplifying communication through realistic visual presentations. Automated cost estimation, lighting analysis, and furniture arrangement further contribute to more efficient project management.

Despite these benefits, AI has several limitations. Artificial intelligence cannot fully understand cultural values, emotional experiences, or individual artistic intentions. Ethical concerns regarding copyright, ownership of AI-generated images, and algorithmic bias remain significant challenges. Therefore, professional designers continue to play a central role in evaluating and refining AI-generated concepts.

Conclusion, Artificial Intelligence is transforming interior design by introducing faster, smarter, and more efficient design methods. AI technologies improve conceptual development, visualization, spatial planning, and communication with clients while reducing project duration and repetitive manual work. Nevertheless, AI cannot replace the creativity, professional judgment, and cultual understanding of experienced interior designers.

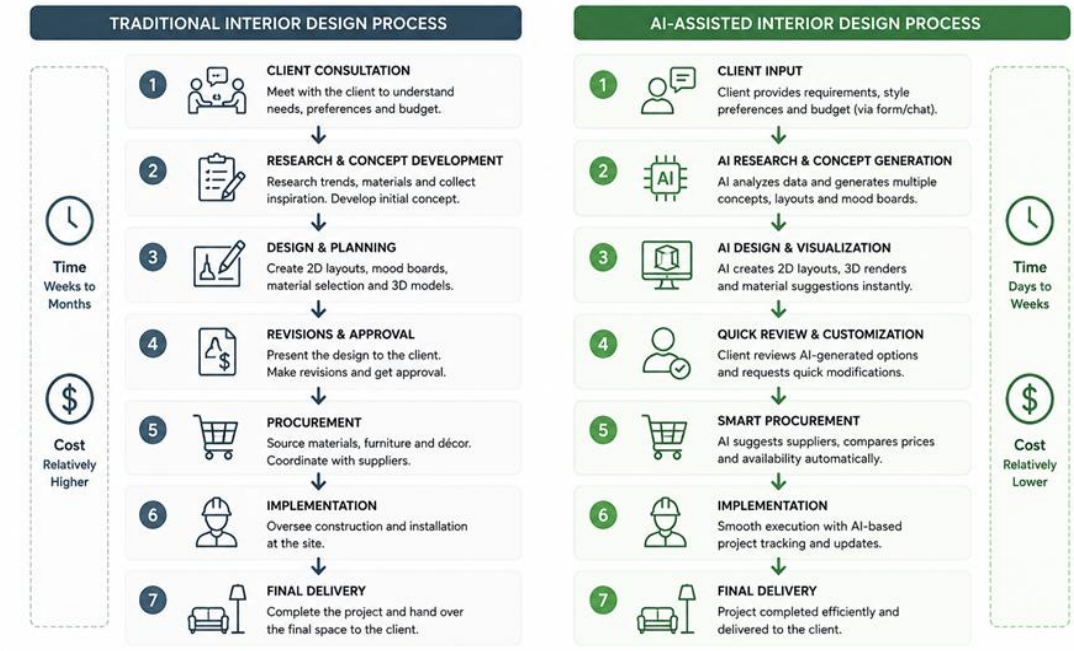


Figure 3. Comparison Between Traditional and AI-Assisted Interior Design Process

The future of interior design lies in the collaboration between human creativity and artificial intelligence. Designers who successfully integrate AI into their professional workflow will be able to deliver more innovative, personalized, and sustainable interior environments.

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