

Interior Designer

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ABSTRACT

In an era of technological innovation, "Interior Designer" emerges as a groundbreaking web application that reimagines interior design by harnessing the power of artificial intelligence. This innovative platform is designed to revolutionize the way individuals and businesses approach interior design and decorating projects. By seamlessly integrating AI technology, Interior Magic transcends traditional design limitations, allowing users to visualize, create, and transform their spaces with ease. The core feature of Interior Designer is its advanced space-scanning capabilities, which enable users to capture the layout and dimensions of their rooms effortlessly. Equipped with AI algorithms, the website processes this spatial data and presents users with an array of design possibilities tailored to their preferences and requirements. From modern living rooms to cozy bedrooms, the application generates design proposals that align with user's vision.

Key words: Technology, Technology, Artificial Intelligence, Interior Design.

INTRODUCTION

Interior Designer represents a cutting-edge convergence of technology and creativity, revolutionizing the way we conceptualize and implement interior spaces. Artificial Intelligence, or AI, is transforming the field of interior design by offering innovative solutions that enhance the aesthetics, functionality, and efficiency of our living and working environments.

AI in interior design leverages machine learning, computer vision, and data analytics to optimize various aspects of designing interior spaces. It can help designers and homeowners make informed decisions, streamline the design process, and create personalized and harmonious interiors that cater to individual preferences and needs.

In this introduction, we will explore how AI is reshaping interior design, from generating design concepts to assisting in space planning, furniture selection, and even predicting trends. We'll also delve into the advantages and challenges of integrating AI into interior design, illustrating how this technology is poised to make our living spaces more beautiful, functional, and user-centric than ever before.

PROBLEM STATEMENT

Interior designer is a complex and challenging task that requires a deep understanding of human needs, aesthetics, and spatial planning. It is also a time-consuming and expensive process, especially for large or complex projects. AI has the potential to revolutionize the interior design industry by automating tasks, generating creative ideas, and providing personalized recommendations to users. Creating personalized, efficient, and aesthetically pleasing spaces often relies on human expertise and can be time-consuming and expensive. The challenge lies in achieving interior designs that seamlessly integrate individual preferences, optimize space utilization, and stay up-to-date with evolving design trends. Additionally, ensuring that designs remain practical, functional, and sustainable presents an ongoing challenge. As a result, there is a pressing need for the integration of AI technologies into the field of interior design to enhance the efficiency, personalization, and overall quality of interior spaces while addressing these challenges. Generating creative and innovative designs: AI systems can generate new designs, but they often lack the creativity and innovation of human designers. Understanding human needs and preferences: AI systems need to be trained on large amounts of data in order to understand human needs and preferences. This data can be difficult and expensive to collect. Integrating with existing design tools and workflows: AI-powered design tools need to be integrated with existing design tools and workflows in order to be adopted by designers.

PROPOSED SYSTEM

A proposed system for interior room design by AI should outline the key components, features, and functionalities of the AI-driven solution. It should address how AI can be used to improve the interior design process. Knowledge base of interior design styles, materials, and furniture. This knowledge base would be used to generate design suggestions and to provide feedback on user-created designs.

As a generative design algorithm, this algorithm would be used to generate new and innovative design ideas based on the user's input and preferences. A 3D rendering engine, this engine would be used to create realistic 3D renderings of the user's design, so that they can see how it would look in real life.

System Components:

Data Collection and Inputs:

Describe how the system collects data, including room dimensions, user preferences, and existing furnishings.

AI Algorithms and Models:

Detail the AI techniques and models used, such as machine learning, computer vision, and natural language processing.

User Interface:

Explain the user interface design for inputting preferences, reviewing design options, and making selections.

Design Generation:

Discuss how AI generates interior design concepts, including layout, color schemes, furniture arrangements, and decor suggestions.

Personalization:

Highlight how the system tailors designs to individual preferences, considering style, functionality, and budget constraints.

Recommendations:

Explain how the system provides recommendations for furniture and decor items, taking into account user preferences and available options.

Visualization:

Discuss the creation of 3D renderings or visualizations to help users better understand the proposed designs.

FRAMEWORK

Designing an AI framework for interior room design involves creating a structured plan or model that outlines how artificial intelligence can be leveraged to optimize and personalize interior spaces. Here's a high-level framework for Interior Designer:

Data Collection and Analysis:

Gather data related to the room's dimensions, layout, existing furniture, and fixtures. Collect user preferences, such as style, color schemes, and specific design elements. Analyze the data to identify design constraints, user preferences, and available resources.

AI-Powered Design Generation:

Utilize AI algorithms, including generative design and deep learning, to create interior design proposals. Incorporate style, functional requirements, and user preferences to generate design concepts. Generate multiple design options to provide users with choices.

User Interaction and Feedback:

Create a user-friendly interface for clients to interact with the AI system. Allow users to review design proposals and provide feedback and customization options. Implement natural language processing (NLP) for conversational design discussions.

Design Refinement:

Incorporate user feedback and preferences to refine the generated designs. Use AI to optimize furniture placement, lighting, and spatial arrangement based on user input. Continuously adapt the design based on evolving user requirements.

Material and Product Recommendations:

Integrate AI-driven tools to recommend materials, colors, furniture, and fixtures that match the design. Consider factors like budget, availability, and sustainability when making recommendations.

Cost Estimation and Budget Management:

Implement cost estimation algorithms to calculate the budget required for the proposed design. Enable users to set budget constraints and provide cost effective alternatives.

DETAILS OF THE DATASETS

Creating AI models for interior room design often requires access to datasets containing information about room layouts, furniture, decor, and other relevant design elements. While there may not be extensive public datasets specifically tailored for this purpose, you can explore and potentially compile your own datasets from various sources.

Online Furniture Retailers: Many online furniture stores offer product catalogs with detailed images, descriptions and dimensions. You can scrape or request data from such retailers with their permission.

Interior Design Magazines and Websites: Collect images and information from interior design publications and websites, including room layouts, color schemes, and furniture arrangements.

3D Model Repositories: Websites like SketchUp's 3D Warehouse and TurboSquid offer 3D models of furniture and interior elements that you can use to create your dataset.

Real Estate Listings: Real estate websites often provide images and floor plans of homes, apartments, and rooms. These can be a valuable source of data for room layout and design.

Furniture and Decor APIs: Some online retailers and interior design websites offer APIs that provide access to their product data. You can use these APIs to collect information about furniture and decor items.

Image Databases: Datasets such as ImageNet and COCO (Common Objects in Context) contain a wide range of images that might include rooms and interior elements. While not specific to interior design, they can be a source for training image recognition models.

Crowd sourcing: Consider creating your dataset by crowdsourcing images and data from interior design enthusiasts, professionals, or users of your AI application.

RESULT AND OUTPUTS

INPUT:



Input image of an office workspace

OUTPUT:



AI generated Design Output

CONCLUSION

Interior Designer, the ultimate space transformation app, uses advanced AI to turn empty spaces into personalized

havens. With seamless visualization and collaboration, it brings your unique space dreams to vibrant life, making imagination a reality. AI has the potential to revolutionize the field of interior room design. AI-powered tools and technologies can help users create more efficient, sustainable, and aesthetically pleasing designs. One of the key benefits of AI in interior room design is that it can help users visualize their space before they start making changes. This can save time and money, as it can help users avoid costly mistakes. Additionally, AI can help users to identify and incorporate sustainable design principles into their projects. Another benefit of AI in interior room design is that it can help users to create more personalized spaces. By understanding the user's individual needs and preferences, AI can generate design suggestions that are perfectly tailored to the user's lifestyle. Overall, AI has the potential to make interior room design more accessible, affordable, and efficient. As AI continues to develop, it is likely to play an increasingly important role in the way we design our living spaces.

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