Dream Deco-AI Powered Interior Design

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ABSTRACT

Interior design plays a key role in enhancing the functionality and aesthetics of spaces. Traditionally, the design process is time-consuming, requiring significant expertise. DreamDeco addresses these challenges by leveraging advanced AI, specifically the pre-trained SDXL 1.0 model, to quickly generate high-quality interior design images based on user prompts.

Trained on a diverse dataset, SDXL 1.0 offers a broad range of stylistic possibilities across 11 distinct interior design themes. Users input design prompts into the web application, which processes these prompts using the Deep Stable Diffusion model. DreamDeco streamlines workflow, democratizes professional-grade design, and showcases the potential of AI in augmenting human creativity. With continuous improvements, DreamDeco aims to set new standards in AI-driven interior design tools.

INTRODUCTION

Background

Interior design is all about creating spaces that are both beautiful and functional. It's an art that's been evolving for centuries, starting with the basic need for shelter and gradually growing into something that reflects style and comfort. As societies developed, interior design started incorporating elements of luxury and personalization, with influences from architecture, furniture, and decoration. Cultural trends, technology, and individual tastes all play a role in shaping how we approach design. Today, interior design is more important than ever, affecting how we feel and interact with our surroundings, whether at home, in the office, or in public spaces. Designers need to know about space, color, materials, and lighting to create environments that not only look good but also serve a practical purpose and enhance well-being.

Project Overview

DreamDeco is an AI-powered interior design tool that assists people in personalizing the decor of their litter rooms. The main reason for developing this program is to help those in need, such low-income households who cannot afford to hire interior designers. It also serves other users, such as professional trying to save time and student looking for inspiration. With the help of the technology, which creates high-quality graphics depending on user inputs, users may design their rooms on their own without the help of an expert.

Objectives

- Develop a user-friendly web application for interior design.
- Utilize advanced AI technology, specifically the pre-trained SDXL 1.0 model, to generate high-quality interior design images.
- Allow users to input their design preferences to receive custom design concepts.
- Make professional-grade interior design accessible to a wider audience.
- Streamline the interior design process for designers and homeowners.
- Help create personalized spaces quickly and easily.

PROBLEM STATEMENT

The process of creating interior design concepts is often time-consuming, requiring significant expertise, manual effort, and trial-and-error. Traditional design methods are not always efficient, and existing automated solutions lack the versatility and quality needed for professional-level interior design. As a result, many individuals and designers struggle to quickly generate high-quality, customized design solutions that meet specific preferences and aesthetics.

DreamDeco aims to address these challenges by leveraging advanced AI technology to streamline the interior design process. However, there is a need for a system that can automatically generate visually appealing, diverse, and high-quality interior design concepts tailored to individual user preferences. Current AI solutions lack the capability to provide fast, customized, and professional-grade results, hindering both designers and homeowners from accessing an easy-to-use tool for creating personalized spaces.

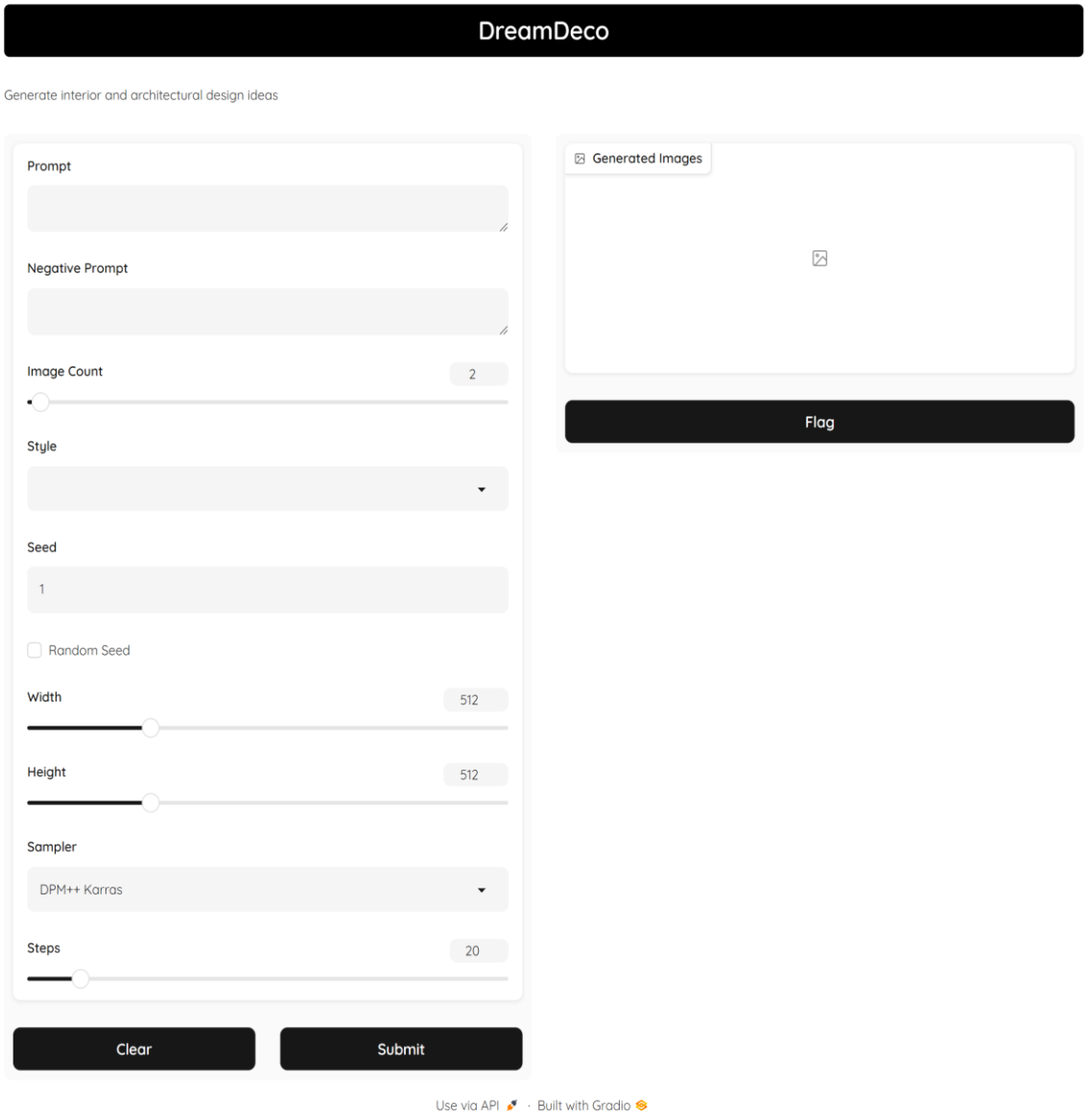
PROPOSED METHODOLOGY

The methodology for the DreamDeco project focuses on leveraging generative AI to create high-quality, stylized interior and architectural design images. It uses Stable Diffusion XL (SDXL) as the core model, with an optional refiner for enhanced image quality. The project is implemented in Python, utilizing libraries like Diffusers, PyTorch, Gradio, and Pillow. Users interact with the system through a Gradio-powered interface, providing input parameters such as prompts, styles, image dimensions, and sampling methods (e.g., Euler A, DPM++, Karras). The process begins with styling the user's prompt based on the selected design theme and uses a diffusion model to iteratively refine random noise into meaningful images. Generated images are saved, displayed in a gallery, and made available for download. The tool emphasizes user customization, offering options for sampling methods, random seeds, and step adjustments to refine outputs. The interface is designed for simplicity, ensuring an intuitive user experience.

Tools And Technologies

- Gradio
- Google Colab
- VS Code
- Hugging face
- Python

ARCGITECTURE AND DESIGN



DreamDeco

Generate interior and architectural design ideas

Prompt

realistic vintage bedroom inspired by 1980's boho lace elements

Negative Prompt

blurry

Image Count 2

Style

Vintage

Seed

1

Random Seed

Width 1000

Height 1000

Sampler

DPM++ Karras

Steps 30

Clear Submit

Generated Images

Flag