Custom 3D Room Rendering with AI-Driven Diffusion and LoRA Techniques

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Abstract:

This paper provides an artificial intelligence-driven 3D construction modeling tool utilizing Low-Rank Adaptation (LoRA) and diffusion models to create plausible 3D room models. This allow users to produce actual-looking images using text or image, unlike traditional 3D modeling tools that requires deep knowledge about the subject and consistent prompting. The model provides user-guided improvements and fine-tuned image models to create custom room layouts. This work emphasizes the possibility to make rendering easier to access for people of all backgrounds.

Keywords:

Photorealistic Architectural Generation, AI- Enhanced 3D Modeling, Multimodal User Interaction, Adaptive LoRA Fine-Tuning, Generative Design Techniques, User-Guided Spatial Modeling, Latent Diffusion-Based Design, Customizable Interior Rendering, AI-Powered Room Visualization, Human-Centered Architectural AI, High-Fidelity Scene Reconstruction, Advanced Diffusion-Based Rendering.