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This study investigates the application of text-to-image generative AI, focusing on the use of Stable Diffusion alongside ControlNet and LoRA models, to streamline landscape conceptual design. Traditional landscape design practices are often labor-intensive and limited by the designer's personal creativity and available time, making it difficult to rapidly generate and explore a wide range of design possibilities. AI-powered tools offer a new approach by enhancing efficiency and enabling designers to quickly produce diverse, visually coherent designs for various landscape typologies, such as natural parks, city plazas, and courtyard gardens. Our research presents a comprehensive workflow for integrating AI into the design process, demonstrating how fine-tuned models can generate landscape designs with superior spatial organization and control over scale and key design elements. By fine-tuning generative models, we achieved results that align more closely with design intentions, outperforming non-fine-tuned models in terms of maintaining spatial consistency, design accuracy, and the incorporation of relevant landscape features. The study employs both qualitative and quantitative evaluations, using quantitative metrics to assess image quality and spatial coherence. The findings reveal that fine-tuned models not only enhance the aesthetic appeal of the generated designs but also contribute to more innovative and creative outcomes. This research highlights the potential for AI tools to revolutionize landscape architecture by accelerating the conceptual design phase and expanding the creative possibilities available to designers. In doing so, it paves the way for more efficient, flexible, and imaginative approaches to landscape design.