


Innovative Applications of Diffusion Models in Visual Style Transformation for Brand Logos

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ABSTRACT

Brand logos anchor visual identity, yet adapting them to diverse styles is difficult because geometry, typography, and brand cues must be preserved while appearance changes. The authors present LogoDiffusion-Align (LDA), a diffusion framework with three coordinated modules: Structure-Preserving Control (SPC) constrains shapes and text to prevent geometric drift; Style-Consistent Alignment (SCA) injects learned style tokens to achieve coherent, scene-wide stylization; and a Logo-specific Identity Module (LIM) embeds brand-aware representations to retain distinctive identity features. Across multiple datasets and usage scenarios, LDA outperforms strong diffusion-based baselines including ControlNet, DreamBooth, StyleTokenizer, and InST on both fidelity and identity preservation. In controlled comparisons, LDA attains higher SSIM (0.789 vs. 0.742) and CLIP-Id (0.752 vs. 0.708), while also reducing FID and LPIPS, indicating a more favorable fidelity–perceptual quality trade-off.

KEYWORDS

Diffusion Models, Logo Stylization, Brand Identity, Style Transfer, Generative Design

INTRODUCTION

Brand logos are central to corporate identity, serving as visual anchors that convey values, aesthetics, and recognition across platforms (Dew et al., 2022; Tang et al., 2025). In contemporary workflows, logos are routinely restyled for advertising, product packaging, user interfaces (UIs), and promotional campaigns (Hosseini et al., 2025). The ability to change a logo’s appearance while preserving its geometry, typography, and brand cues is therefore essential (Chiu et al., 2023; Huang, 2022). Automating this process remains difficult, however, because methods must enforce structural integrity and identity retention while applying a new style (Ali & Simmou, 2025; Lu, 2025).

Traditional style-transfer techniques and recent diffusion-based models enable flexible image stylization, but they perform inconsistently on logos (Warner et al., 2023). Common failure modes include geometric drift, fragmented or regionally inconsistent stylization, and loss of identity features such as typographic details and emblem elements (Chen et al., 2023; Chung et al., 2024). These limitations motivate a central question: how to achieve style transformation that simultaneously

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maintains structural fidelity, enforces coherent style application, and preserves brand identity (Shua, 2025; Wang et al., 2025).

The current work solves the problem, coming up with the diffusion-based model that focuses on logo stylization. Our hypothesis is that generic approaches can be supplemented with domain-specific modules to address the limitations of their findings and provide highly stable and brand-conscious results applicable to real workflows. The difficulty is building a compromise between the limitations on geometry and text and the alignment on the global style and identity maintenance, subject to the computational properties of diffusion sampling.

We present LogoDiffusion-Align (LDA), a framework that aims at controlled restyling of logos. LDA has three complementary components: Structure-Preserving Control (SPC), which includes geometric and textual feature constraints (that prevent distortions); Style-Consistent Alignment (SCA), which introduces style tokens in cross-attention layers (so as to enforce scene-wide consistency); and a Logo-Specific Identity Module (LIM) that injects brand-aware embeddings (so as to retain prominent identity information). Combined, the modules help LDA to create logos that are structurally diligent, stylistically accurate, and brand faithful.

This work provides several contributions. The first is the novel LDA framework, which is the first to explicitly aim at integrating structure, style, and identity during diffusion-based logo stylization. Second, a wide range of experiments conducted on datasets and scenarios, such as few-shot evaluation, single-instance evaluation, and cross-dataset evaluation, is used to thoroughly test its reliability. Third, we offer practical case studies on how LDA can be applied in advertising, packaging design, and the aesthetics of UIs, highlighting its potential in practical branding processes. This study advances the understanding of the generative modeling field in branding solutions and the potential of domain-adapted diffusion models in creative sectors in general by facilitating the connection of methodological innovation with the usefulness of design.

RELATED WORK

The research that is relevant to logo style transformation may be subdivided into three categories: neural style transfer and generative adversarial network (GAN)-based stylization, diffusion models of controllable image generation, and techniques of structural/localized control.

Neural Style Transfer and GAN-Based Methods

Neural style transfer methods, including Gram-matrix optimization and adaptive instance normalization, provided the first practical separation of content and style but are fragile to input shifts and often create artifacts on structured graphics such as logos (Qiu et al., 2022). GAN translation frameworks (CycleGAN, StarGAN) deliver efficient domain transfer (Iglesias et al., 2023), yet training instability and mode collapse limit robustness (Saad et al., 2024); furthermore, they typically struggle to preserve letterform clarity and geometric constraints (Krishnan et al., 2023; Wu, 2025).

Diffusion Models for Image Synthesis and Stylization

Stable diffusion and latent diffusion demonstrate strong text-to-image capabilities (Rombach et al., 2022), with SDXL and StyleDrop advancing style modulation and InstantID improving portrait identity retention (Podell et al., 2023; Sohn et al., 2023; Wang et al., 2024). The iterative denoising paradigm grants fine control over local and global attributes (Luo et al., 2023). Even so, logos pose a distinct challenge: as compact, symbolic marks with strict shape and typographic requirements, they can be degraded by unconstrained diffusion, which may distort edges and curves (Mu et al., 2024).

Structural and Localized Control

Geometry and locality guidance strategies such as ControlNet (CN; edge/segmentation/depth conditioning) and DiffStyler (DS; cross-attention fusion with low-rank adaptation [LoRA] to do

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