

Image Restoration: A LSHADE-GAN Approach for Yoruba Documents

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ABSTRACT

The paper introduces an innovative approach to reconstructing historical handwritten texts, specifically focusing on Yoruba documents. This method combines a generative adversarial network (GAN) with the LSHADE algorithm to create the LSHADE-GAN model. Trained on a curated dataset of five degraded Yoruba documents, this model surpasses traditional image-processing techniques and deep learning-based methods in performance. Evaluation of the LSHADE-GAN model using two samples reveals F-measures of 61.83% and 78.02%, showcasing its superiority over DE-GAN (58.24% and 75.23%) and PSO-GAN (51.67% and 66.46%) approaches. Additionally, the model demonstrates enhanced PSNR and visual quality, underscoring its effectiveness in preserving cultural heritage through accurate reconstruction of historical texts.

Keywords: *Historical document restoration, GANs, LSHADE, image processing, deep learning, Yoruba culture, cultural heritage preservation.*
