SPL-1 Project Proposal Form, 2023
Institute of Information Technology (IIT)
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Project Name : **SVD-based image compression project.**

Project Description: A project to implement image compression using Singular Value Decomposition (SVD) for efficient storage and transmission of images.

SVD Basics and Role in Image Compression:

1.SVD Introduction: Start by introducing SVD as a mathematical technique used for matrix factorization and dimensionality reduction.

2.Matrix Representation: Explain that SVD is applied to the image as a matrix where rows represent pixels and columns represent color channels (e.g., Red, Green, Blue).

3.SVD Decomposition: Describe the process of decomposing the image matrix into three other matrices - U, Σ (Sigma), and V^T (transpose of V).

4.Singular Values: Discuss how the Σ matrix contains singular values that represent the importance of each component in the decomposition. Larger singular values correspond to more significant information.

a) 1. U (m x m).b) Σ (m x n). c) c) V^T (n x n).

5.Data Preprocessing: Preparing the image data for compression.

6.Compression Process: Detailing the steps to compress an image.

7.Future Enhancements: Potential improvements and additions to the project.

8.Conclusion: Summarizing project achievements and applications of SVD-based image compression.