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**Timothy Jesse Redford\*** (tredford@uncc.edu) and **Xingjie Helen Li** (xli47@uncc.edu).

*Adaptive SVD Image Compression Framework For Modeling The Impact Of Visual Stimulus And Complexity in Digital Images.* Preliminary report.

Singular Value Decomposition (SVD) has been employed for processing a variety of data types and dimension reduction. Because all digital images can be represented as matrices, this method of matrix factorization is universally accessible to a variety of image processing applications including compression, encryption, analysis, and denoising. This paper proposes a benchmark investigation based on numerical experiments of how SVD can be used in conjunction with human visual system imitation and offers an adaptive image compression framework for optimizing the rank approximation of color images and their respective grayscale. Presented methodologies involve a heuristic argument for how adaptive sub-matrix approximations should be distributed, exploiting the fact that image deterioration is less obvious to the human eye when presented in areas of an image which do not receive the same level of visual attention. We discuss experimental evidence which appears to support this claim on this basis of compression ratio, time complexity, and semantic error types in comparison to visual inspection of the decompressed image(s) generated by our proposed methods of adaptive image compression. (Received September 17, 2019)