1116-H1-1556 **Naima Naheed*** (naheedn@benedict.edu). *Singular Value Decomposition: A thrilling inspiration in Linear Algebra.*

In recent years, the singular value decomposition (SVD) has become a very popular matrix factorization due to surge in applications, and increased computational memory and speed. An arbitrary $m \times n$ matrix A with $m \geq n$, can be factored as $A = U\Sigma V^T$, where U is m-by-m and satisfies $U^TU = I$, V is an n-by-n and satisfies $V^TV = I$, and $\Sigma = \text{diag}(\sigma_1, \ldots, \sigma_n)$, where $\sigma_1 \geq \sigma_2 \geq \cdots \geq \sigma_n \geq 0$. The σ_i's which are determined by this factorization is unique and are called the singular values of A. The series of values are arranged in a decreasing order, so that the first few singular values contain more information about the original matrix of A than the later values. By taking only the first few singular values, it is possible to reduce the amount of information contained in an image and compress the image. The SVD can also be used to restore a corrupted image by separating significant information form the noise in the image data set. In addition to these, the SVD has fundamental importance in several different applications of linear algebra. With its bountiful theory and applications, the SVD is truly amazing. (Received September 20, 2015)