

1106-41-1084      **Aritra Dutta\*** (d.aritra2010@knights.ucf.edu), 4000 Central Florida Blvd, MSB, Orlando, FL 32816, and **Xin Li** (xin.li@ucf.edu). *An Extension of a Result of Golub, Hoffman and Stewart*. Preliminary report.

The classical PCA method can provide a low rank approximation for a high-dimensional data matrix. But if one wants to preserve some elements of the matrix while approximating it by a low-rank matrix, the PCA method could not be applied. Golub, Hoffman, and Stewart (“A generalization of the Eckart-Young-Mirsky matrix approximation theorem”, *Linear Algebra Appl.*, 88/89(1987), pp. 317-327) are among the first to consider the constrained approximation by low-rank matrices. In this talk, we will present an extension of the results of Golub, Hoffman and Stewart by considering a special family of weighted approximation by low-rank matrices. We will show that the solutions to our weighted approximation problem converge to the results of Golub, Hoffman and Stewart. Unlike the methods of PCA or Golub, Hoffman and Stewart, our solutions do not admit a close form in general. We have developed a numerical algorithm for the computation of the weighted approximating matrices. In this presentation we will demonstrate some numerical results that implement our algorithm. (Received September 10, 2014)