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Blake A Hunter* (blakehunter@math.ucla.edu), UCLA Mathematics Department, Box 951555, Los Angeles, CA 90095-1555. *Social Network Clustering of Sparse Data.*

Trillions of devices around the world are continuously producing exabytes of data every day. The impact of search engines has been enormous, but there is also a parallel development in the applications of these methods to other related problems concerning the extraction of knowledge from large datasets. Data mining is the mathematics, methodologies and procedures used to extract knowledge from large datasets. While this includes topics related to search engines it is mainly devoted to the more general problem of finding features and structure in a dataset. There are many active scientific fields, including pure and applied mathematics, statistics, computer science and engineering with numerous applications such as finance, the social sciences, and the humanities. Spectral embedding uses eigenfunctions of a Laplace operator (or related graph affinity matrix) for extracting the underlying global structure of a dataset. This talk will give an introduction to spectral embeddings. Applications presented will include clustering LA street gang members based on sparse observations of where and who they are seen with. (Received September 25, 2012)