A Colloquium in Commemoration of Prof. Gene Golub

Probability, linear algebra, and numerical analysis: the mathematics behind Google's™ PageRank™

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Date: Friday, February 29, 2008
Time: 2:40-3:40pm
Room: MG 108

Abstract
PageRank(TM) is a scoring system used by Google(TM) for determining the "importance" of a webpage. As stated on their website (www.google.com/technology/index.html), RageRank(TM) is "the heart of [Google's] software ... and continues to provide the basis for all of [their] web search tools". We survey the mathematics associated with the basic PageRank model and discuss how it is computed. This latter topic was a recent focus of Prof. Golub's research. If time permits, we also discuss more advanced topics such as acceleration methods for computing PageRank, personalizing PageRank, and ideas for improving a webpage's PageRank score. This talk should be accessible to undergraduates in mathematics, engineering, and science.

Background
On November 16, 2007 the numerical analysis community lost one of its pioneers when Gene Golub passed away. Prof. Golub was a towering figure in numerical analysis with research contributions that touched almost every cornerstone of numerical linear algebra and its applications. The most important of these contributions would have to be the the singular value decomposition (SVD) of a matrix, for which he not only provided the first viable and robust algorithm for computing, but also pioneered many of its most fundamental applications. Together with Charles van Loan, he authored the monumental treatise *Matrix Computations*, which has remained the definitive reference on this topic through multiple editions since its original publication in 1983. This talk is part of a worldwide celebration of the life and memory of Gene Golub that will take place on February 29, 2008, which would have been his 19th Birthday (http://www.cs.nyu.edu/overton/genearoundtheworld/). Please join us.