

Gene Howard Golub (February 29, 1932 – November 16, 2007), Fletcher Jones Professor of Computer Science (and, by courtesy, of Electrical Engineering) at Stanford University, was one of the preeminent numerical analysts of his generation.

Personal life

Born in Chicago, he was educated at the University of Illinois at Urbana-Champaign, receiving his B.S. (1953), M.A. (1954) and Ph.D. (1959) all in mathematics. His M.A. degree was more specifically in Mathematical Statistics. His PhD dissertation was entitled "The Use of Chebyshev Matrix Polynomials in the Iterative Solution of Linear Equations Compared to the Method of Successive Overrelaxation" and his thesis adviser was Abraham Taub. Gene Golub succumbed to acute myeloid leukemia on the morning of 16 November 2007 at the Stanford Hospital.

Career at Stanford University

Gene Golub arrived at Stanford in 1962 and became a professor there in 1970. He was an important figure in numerical analysis and pivotal to creating the NA-Net and the NA-Digest, as well as the International Congress on Industrial and Applied Mathematics.

Gene Golub had a remarkable career. He himself vividly recalled many milestones. The success of his work on semi-iterative methods with Varga in the early 1960s, the computation of the SVD with Kahan in the mid-1960s, see [1], and the fast Poisson solver in the early 1970s, followed with several milestone papers that have made an impact not only on the field of numerical linear algebra but on the broad areas of science and engineering in a variety of disciplines. His work on the preconditioned conjugate gradient method in the late 1970s (joint work with Paul Concus and Dianne O'Leary, see REF) helped popularize the method among large circles of scientists and practitioners. He also helped to put the total least squares problem on the map, see REF. He worked on moments and quadrature rules with a variety of collaborators, work of great mathematical beauty, see, e.g., REF. One of his latest contributions is his work on Google's PageRank algorithm; a technique for accelerating the convergence of the algorithm (joint work with Sep Kamvar, Taher Haveliwala and Christopher Manning) has received much attention.

A survey of his work was published in 2007 by Oxford University Press as "Milestones in Matrix Computation" [2]. One of his best-known books is

Matrix Computations [3] co-authored with Charles F. Van Loan.

He advised more than thirty doctoral students, many of whom have themselves achieved distinction. The bulk of Gene Golub's research work was collaborative. He had at least 181 distinct co-authors and the number may still increase as co-authored papers keep appearing posthumously.

Recognition

Golub was awarded the B. Bolzano Gold Medal for Merits in the Field of Mathematical Sciences and was one of the few elected to three national academies: the National Academy of Sciences (1993), the National Academy of Engineering (1990), and the American Academy of Arts and Sciences (1994). He was also a Foreign Member of the Royal Swedish Academy of Engineering Sciences (1986).

He is listed as an ISI highly cited researcher. He held 11 honorary doctorates and was scheduled to receive an honorary doctorate from ETH Zürich on November 17, 2007. He was a visiting professor at Princeton (1970), MIT (1979), ETH (1974 & 2002), and Oxford (1982, 1998 & 2007).

Gene Golub served as the president of the Society for Industrial and Applied Mathematics from 1985 to 1987 and was founding editor of both the SIAM Journal on Scientific Computing (SISC) and the SIAM Journal on Matrix Analysis and Applications (SIMAX).

This text is adopted from Wikipedia.com and the first chapter of the book Milestones in Matrix Computation [2].

References

- [1] G. Golub and W. Kahan. Calculating the singular values and pseudo-inverse of a matrix. *Journal of the Society for Industrial and Applied Mathematics: Series B, Numerical Analysis*, 2:205–224, 1965.
- [2] Gene H. Golub. *Milestones in Matrix Computation: Selected Works of Gene H. Golub, with Commentaries*. Oxford Science Publications. Oxford University Press, Oxford, 2007. Edited by Raymond H. Chan, Chen Greif and Dianne P. O'Leary.
- [3] Gene H. Golub and Charles F. Van Loan. *Matrix Computations*. Johns Hopkins Studies in the Mathematical Sciences. Johns Hopkins University Press, Baltimore, MD, fourth edition, 2013.