

John R. Gilbert
Professor of Computer Science
University of California, Santa Barbara

Brief Biography:

John R. Gilbert received his Ph.D. in Computer Science at Stanford in 1981. From 1981 to 1988 he was on the Computer Science faculty at Cornell. In 1988 he moved to Xerox PARC, where he performed and directed research in parallel computing, computational geometry, languages and compilers for high-performance computing, and mathematical algorithms and software. In 1997 he founded the Computation and Matter Area at PARC, whose projects included distributed data analysis for collaborating sensors, meso-scale MEMS for active surfaces, and modular robotics. In 2002, Dr. Gilbert joined the Computer Science Department and the Computational Science and Engineering program at the University of California, Santa Barbara, where he leads research in high-performance computing, interactive supercomputing, and combinatorial and sparse matrix algorithms for scientific computation. Dr. Gilbert has served on the Council of the Society for Industrial and Applied Mathematics, has chaired the SIAM Activity Group on Supercomputing and the ACM Special Interest Group on Numerical Mathematics, and has served as editor for several journals in computational science and applied mathematics.

Professional Preparation:

- Stanford University. Ph.D., Computer Science, 1981.
- University of New Mexico. B.U.S., summa cum laude in Mathematics, 1973.

Appointments:

- University of California, Santa Barbara. Professor of Computer Science, since 2002.
- Lawrence Berkeley National Laboratory. Faculty Scientist, since 2004.
- Massachusetts Institute of Technology. Visiting Scientist, Laboratory for Computer Science and Mathematics Department, 2002-2003.
- Xerox Palo Alto Research Center. Principal Scientist and Manager, Computation and Matter Area, 1997-2002. Manager, Computational Methods Area, 1994-1997. Member of Research Staff, 1988-1994.
- Cornell University. Associate Professor of Computer Science, 1986-1988. Assistant Professor of Computer Science, 1981-1986.

Five Publications Related to Project:

- J. Gilbert, V. Shah, T. Letsche, S. Reinhardt, and A. Edelman. An interactive approach to parallel combinatorial algorithms with Star-P. HPEC 2005. Available at <http://www.cs.ucsb.edu/~gilbert/reports/combalgs.doc>.
- V. Shah and J. R. Gilbert. Sparse matrices in Matlab*P: Design and implementation. *Proc. 11th Int. Conf. on High Performance Computing (HiPC)*, Springer-Verlag LNCS 3296: 144-155, 2004.

- R. Choy, A. Edelman, J. Gilbert, V. Shah, and D. Cheng. Star-P: High productivity parallel computing. HPEC 2004.
- J. R. Gilbert, G. L. Miller, and S. Teng. Geometric mesh partitioning: Implementation and experiments. *SIAM J. Scientific Computing*, 19: 2091-2110, 1998.
- J. R. Gilbert. Predicting structure in sparse matrix computations. *SIAM J. Matrix Analysis and Applications*, 15: 62-79, 1994.

Five Other Publications:

- J. W. Demmel, J. R. Gilbert, and X. S. Li. An asynchronous parallel supernodal algorithm for sparse Gaussian elimination. *SIAM J. Matrix Analysis and Applications*, 20: 915-952, 1999.
- M. Bern, D. Eppstein, and J. R. Gilbert. Provably good mesh generation. *J. Computer and System Sciences*, 48: 384-409, 1994.
- J. R. Gilbert, C. Moler, and R. Schreiber. Sparse matrices in Matlab: Design and implementation. *SIAM J. Matrix Analysis and Applications*, 13: 333-356, 1992.
- J. R. Gilbert and T. Peierls. Sparse partial pivoting in time proportional to arithmetic operations. *SIAM J. Scientific and Statistical Computing*, 9: 862-874, 1988.
- J. R. Gilbert and E. Zmijewski. A parallel graph partitioning algorithm for a message-passing multiprocessor. *Int. J. Parallel Programming*, 16: 427-449, 1987.

Synergistic Activities:

- Co-organizer, SIAM Workshop on Combinatorial Scientific Computing, 2004 & 2005.
- PI, DOE/HPCS contract "PetaScale Application Development Analysis," 2003-06.
- Co-PI (at Xerox PARC, with A. Berlin and F. Zhao), DARPA contract "CoSense: Collaborative Sensemaking for Target Recognition and Condition Monitoring," 2000-02.
- Society for Industrial and Applied Mathematics (SIAM). Council, 1997-2003. Program Director, Activity Group on Linear Algebra, 1992-97.
- ACM Special Interest Group for Numerical Mathematics. Chair, 1993-97.
- Associate Editor, SIAM Review, since 2004. Former Associate Editor of ACM Trans. Math. Software, SIAM J. Matrix Analysis, SIAM J. Algebraic and Discrete Methods.

Collaborators:

- **PI's collaborators and co-authors in past 48 months:** Andrew Berlin, David Cheng, Ron Choy, Tim Davis, Iain Duff, Alan Edelman, Frederic Gibou, Nisheet Goyal, Laura Grigori, Stefan Larimore, Todd Letsche, Xiaoye Sherry Li, Eckart Meiburg, Wasim Mohiudden, Esmond Ng, Imran Patel, Stephane Pralet, Steven Reinhardt, Viral Shah, Sivan Toledo, Feng Zhao.
- **PI's thesis advisor:** Robert Tarjan.
- **Ph.D. students advised:** Current: Vikram Aggarwal, Imran Patel, Viral Shah. Past: Anders Edenbrandt, Hjalmtyr Hafsteinsson, Raimund Seidel, Earl Zmijewski.
- **Postdoctoral scholars supervised:** Nina Amenta, David Eppstein, Nabil Kahale, Shang-Hua Teng, Sivan Toledo.