Jeffrey S. Vitter
Biography

Dr. Jeffrey Vitter is Distinguished Professor Emeritus and served as 17th Chancellor of the University of Mississippi. He is currently adjunct professor at Tulane University. He played leadership roles as provost, executive vice chancellor, and Roy A. Roberts Distinguished Professor at the University of Kansas; as provost, executive vice president, and professor at Texas A&M University; as Frederick L. Hovde Dean of Science and professor at Purdue University; as department chair and Gilbert, Louis, & Edward Lehrman Distinguished Professor at Duke University; and as computer science professor at Brown University.

He received a B.S. with highest honors in mathematics in 1977 from University of Notre Dame; a Ph.D. in computer science in 1980 from Stanford University; and an M.B.A. in 2002 from Duke University.

At his institutions, Dr. Vitter led the collaborative development and implementation of strategic plans and initiatives, including novel undergraduate curricula, powerful teams for multidisciplinary research, effective mechanisms for stellar hiring, partnerships with external communities for engaged scholarship, active and online learning programs, administrative efficiencies, and robust fundraising.

Dr. Vitter is a Sigma Xi member since 1983 and has served in numerous leadership roles for professional societies, journals, conferences, and research organizations. He has been elected a Fellow of the Guggenheim Foundation, AAAS, National Academy of Inventors, ACM, and IEEE. He was named NSF Presidential Young Investigator and a Fulbright Scholar. He has over 375 publications in books, journals, conferences, patents, and technical reports. He is an ISI highly cited researcher with a Google Scholar h-index in the 80s.

Dr. Vitter is known internationally for research in big data and data science, in four primary subfields: external memory algorithms, compressed data structures, data compression, and machine learning (AI) for prediction and database optimization. His book on external memory algorithms is a standard reference. His work on random sampling has received 2,500+ citations. He co-created the wavelet tree data structure (not to be confused with wavelets for multiresolution analysis discussed in the next paragraph), now ubiquitous in text indexing and pattern matching. A provably efficient adaptive Huffman coding algorithm bears his name. He codeveloped the FELICS algorithm for lossless image compression, implemented in hardware as part of NASA's Mars Reconnaissance Orbiter; it influenced algorithms in the Lossless JPEG standard. In video compression, he co-proposed a paradigm of

minimizing the combined measure of rate plus distortion to improve motion estimation, an idea since incorporated into the H.264/MPEG-4 VC standard's reference encoder.

Dr. Vitter and collaborators were first in the database and systems communities to apply wavelets and compression techniques as key machine learning (AI) tools for summarizing, approximating, and predicting data. Wavelets have since become widely used in database optimization, data warehousing, data analytics, data streams, and data mining. For this work, he and coauthor received the 2009 ACM SIGMOD Test of Time award. He co-developed novel and provably efficient machine learning mechanisms for prefetching, caching, scheduling, database query optimization, and power management in mobile devices.

Details appear in his full curriculum vitæ, `https://vitter.org/jsv/`.