

Citation

For pioneering researches in computer architecture, especially RISC processors, as well as outstanding contribution to and leadership in higher education.



Dr. John L. Hennessy

Positions and Organizations :

President Emeritus, Stanford University
 Director, Knight-Hennessy Scholars Program, Stanford University
 Professor of Electrical Engineering and Computer Science, Stanford University

Degree : Ph.D. (State University of New York, Stony Brook, 1977)

Date of Birth : September 22, 1952

Brief Biography :

1973 B.E. Electrical Engineering, Villanova University
 1975 M.S. Computer Science, S.U.N.Y., Stony Brook
 1977 Ph.D. Computer Science, S.U.N.Y., Stony Brook
 1977 Assistant Professor of Electrical Engineering, Stanford University
 1983 Associate Professor of Electrical Engineering, Stanford University
 Director of Computer System Laboratory, Stanford University
 1984 Cofounder & Chief Scientist, MIPS Computer Systems (now part of Imagination Technologies)
 1986 Professor of Electrical Engineering and Computer Science, Stanford University
 1987 Willard and Inez Kerr Bell Endowed Professor, Stanford University
 1992 Chief Architect, Silicon Graphics Computer Systems
 1994 Chairman, Department of Computer Science, Stanford University
 1996 Dean, School of Engineering, Stanford University
 1999 Provost, Stanford University
 2000 President, Stanford University
 2016 Shriram Family Director, Knight-Hennessy Scholars Program, Stanford University

Main Awards and Honors:

1994 IEEE Emanuel R. Piore Award
 2000 IEEE John Von Neumann Medal (jointly with D. Patterson)
 2000 Benjamin Garver Lamme Award, American Society for Engineering Education
 2001 Seymour Cray Computer Engineering Award
 2001 Eckert-Mauchly Award, ACM and IEEE Computer Society
 2004 C&C Prize (jointly with D. Patterson)
 2005 Founders Award, American Academy of Arts and Sciences
 2007 Fellow, Computer History Museum
 2012 IEEE Medal of Honor
 2013 Carnegie Academic Leadership Award, Carnegie Foundation
 2016 Frank E. Taplin Public Intellectual Award, Woodrow Wilson National Fellowship Foundation

Fellow of ACM, IEEE, and AAAS. Member of NAE, NAS and American Philosophical Society

Main Achievements :

He earned his bachelor's degree in electrical engineering from Villanova University, and his master's degree and Ph.D. in computer science from State University of New York, Stony Brook. He joined Stanford's faculty in 1977 and focused on the research of RISC (Reduced Instruction Set Computer), which

revolutionized the computer industry by increasing performance while reducing costs. RISC processors achieved higher speeds because they operated from a set of simpler computer instructions than earlier microprocessors. In 1981, he initiated the MIPS project at Stanford. MIPS is a high-performance RISC, built in VLSI. In addition to his role in the basic research, he played a key role in transferring this technology to industry. During a sabbatical leave from Stanford in 1984-85, he cofounded MIPS Computer Systems (later MIPS Technologies Inc. and now part of Imagination Technologies), which specializes in the production of chips based on these concepts. Several billion MIPS microprocessors have been shipped in devices ranging from video games and computers to network devices. The low power-consumption and heat characteristics of embedded MIPS implementations, the wide availability of embedded development tools, and knowledge about the architecture means use of MIPS microprocessors in embedded roles is likely to remain common.

He also led the Stanford DASH (Distributed Architecture for Shared Memory) multiprocessor project. DASH was the first scalable shared memory multiprocessor with hardware-supported cache coherence. More recently, he has been involved in FLASH (FLexible Architecture for Shared Memory), which is designed to support different communication and coherency approaches in large-scale shared-memory multiprocessors.

He co-authored, with David A. Patterson from UC Berkeley, two well-known books on computer architecture, *Computer Organization and Design: the Hardware/Software Interface* and *Computer Architecture: A Quantitative Approach*, which introduced the DLX RISC architecture. They have been widely used as textbooks for graduate and undergraduate courses since 1990. He rose to full professorship in 1986 and became Willard and Inez Kerr Bell Endowed Professor of Electrical Engineering and Computer Science. He served as director of Stanford's Computer System Laboratory (1983-1993), chair of the Department of Computer Science (1994-96), dean of the School of Engineering (1996-99), provost (1999-2000), and president (2000-2016).

Among numerous honors, he received the IEEE Medal of Honor (2012), Eckert-Mauchly Award of the Association for Computing Machinery (2001), Seymour Cray Computer Engineering Award (2001), and IEEE John von Neumann Medal (2000). He was made a fellow of Computer History Museum in 2007. He is a fellow of IEEE, the American Academy of Arts and Sciences, the Association for Computing Machinery and is a member of the National Academy of Engineering and the National Academy of Sciences.

He is currently a director of the Knight-Hennessy Scholars Program, which annually admits 100 high-achieving students with demonstrated leadership and civic commitment. Upon admittance to this program, scholars from a wide range of backgrounds and nationalities will receive funding for three years to pursue master's or doctorate level degrees, or professional programs, along with leadership education and innovation and other curricula designed to develop their capacity to lead ambitious changes in a complex world.

For pioneering researches in computer architecture, especially RISC processors, as well as outstanding leadership and contribution to higher education, Dr. John L. Hennessy is hereby awarded the Okawa Prize.