



## *IN MEMORIAM*

**Chittoor V. Ramamoorthy**

Professor of Electrical Engineering and Computer Science, Emeritus  
UC Berkeley  
1926 – 2016

Chittoor V. Ramamoorthy was an outstanding scholar and a superb teacher and mentor for all his students and numerous other colleagues. He was a native of Burma where he was born on May 5, 1926 in Rangoon. He was a resident of Berkeley, California, and died on March 9, 2016, at UCSD's Thornton Hospital in San Diego, California, at the age of 90.

Professor Ramamoorthy received his undergraduate and graduate degrees in India and the U.S, respectively. In particular, he received six earned degrees, including an undergraduate degree in physics and also an undergraduate degree in textile technology from the University of Madras in India. Subsequently, he received two graduate degrees (M.S., Mechanical Engineering, 1951; M.Eng., Mechanical Engineering, 1953) from the University of California, Berkeley, and later two graduate degrees from Harvard in Applied Mathematics and Electrical Engineering and Computer Science, including his Ph.D. Degree in 1964.

While at Harvard, Professor Ramamoorthy also worked with Honeywell's Computer Division in Waltham, MA, from 1956 to 1967, where he was later a Senior Staff Scientist. He designed read/write heads for tape drives and worked on the first Honeywell digital inertial guidance system. He subsequently was amongst the three engineers under Dr. Eachus, the American collaborator of Alan Turing, who worked on the design of the Enigma that broke the German secret code. He then joined the University of Texas, Austin, as a Professor of Electrical Engineering and Computer Science. He also served as the Chair of the UT Austin Electrical and Computer Engineering Department. In 1972 he joined UC Berkeley as a Professor of Electrical Engineering and Computer Science,

retiring in 1993. During his long career, he served on many advisory committees, including those of the U.S. Army, Air Force, and Navy; Los Alamos Labs; Lockheed Research; Hitachi; NEC; and IBM.

Professor Ramamoorthy's research accomplishments span several important areas of Computer Science, including synthesis of parallel programs, optimal organization and scheduling of parallel programs, recovery and roll-back techniques for enhancing the dependability of distributed systems, automated simulation and testing of safety-critical systems, and other innovative research projects. His research contributions have had significant impact on enhancing the dependability of safety-critical distributed real-time embedded systems. For example, in the late 1960's, Professor Ramamoorthy and his students developed an automated test generation and evaluation system which discovered several programming errors in the U.S. Army's Safeguard Missile Defense System. Updated versions of these tools were used in 1971 at NASA's Space Shuttle Structural Test Facility in Huntsville, AL, to rigorously test the Space Shuttle System. Earlier, he was responsible for the development of the entire microcode for instruction sequencing and control of the first transistorized system of Honeywell, the H-290 in 1961. The H-290 was a general purpose, stored-program digital computer designed for process monitoring and control. Later, he did research on functions, features, and control in the service industries and he showed the close and enduring relationships between software engineering and service engineering. Over the years, Professor Ramamoorthy published numerous papers in prestigious journals and conferences and also wrote several books based on his research. He also obtained patents in computer architecture, software engineering, computer testing and diagnosis, and databases.

Professor Ramamoorthy was also an outstanding educator in engineering, computer science, and software engineering. He supervised 73 PhD students who subsequently had distinguished careers, including a Vice Chancellor, 3 University Presidents, and several Deans, Department Chairs, Chair Professors, CEOs, and also a President of the IEEE Computer Society. Together with Raymond T. Yeh, he is given credit for establishing the discipline of software engineering, the largest of all the engineering disciplines. He was also the founding member of several organizations, including the Society for Design and Process Science (SDPS) where he served as Board Chair until his death. For more than 60 years Professor Ramamoorthy made important contributions to software engineering, distributed and parallel computation, and computer architecture through his research, teaching, and publications. He was an important figure in the development of computing technology, and was always looking forward to the future. He had a large following worldwide with whom he actively collaborated until the last few months of his life. Through these collaborations, a multitude of advances were made, including the exploration of transdisciplinary methods and the development of a science to support future complex systems design.

Based on his outstanding educational and research accomplishments, Professor Ramamoorthy received multiple prestigious awards, including the IEEE Golden Core recognition award in 1966, IEEE Computer Society Honor Roll Award in 1974, IEEE Computer Society Special Education Award in 1978, IEEE Centennial Medal Award in 1984, IEEE Taylor L. Booth Education Award in 1989, IEEE Computer Society

Meritorious Service Award in 1991, IEEE Richard E. Merwin Distinguished Service Award in 1993, Distinguished Scholar Award from the Society for Design & Process Science in 1995, IEEE Third Millennium Medal, IEEE Tsutomu Kanai Award in 2000, Control Data Distinguished Professorship at the University of Minnesota, Grace Hopper Chair at the U.S. Naval Postgraduate School in Monterey, CA, Senior Research Fellow at the ICC Institute of UT Austin, and other such prestigious awards and recognitions.

In addition to education and research, Professor Ramamoorthy contributed enormously to professional societies. He was a Life Fellow of the IEEE and Fellow of the Society of Design and Process Science. He served as the first elected V.P. of the IEEE Computer Society and was its first V.P. of Education as well as the Education Chair of the American Federation of Information Processing Societies (AFIPS). He served as the Editor in Chief of the *IEEE Transactions on Software Engineering* and was the founding Editor in Chief of the *IEEE Transactions on Knowledge and Data Engineering*. Professor Ramamoorthy was the Editor in Chief of the *International Journal of Software Engineering and Artificial Intelligence* and the founding Co-Editor in Chief of the *International Journal of Systems Integration* and the *Journal of the Society of Design and Process Science*. He was very actively involved in numerous conferences including serving as the Co-General Chair of the *2nd International Conference on Software Engineering (ICSE)* in 1976.

In recognition of Professor Ramamoorthy's educational and research contributions to society, in 1997 the C.V. Ramamoorthy Distinguished Research Award was established at the University of California, Berkeley, to recognize students who have made outstanding contributions to a new research area in computer science and engineering. In 2006, the Society for Design & Process Science created the Ramamoorthy-Yeh Endowment to support international transdisciplinary and transformative scientific research, education, and knowledge dissemination. In the same year, 2006, the IEEE International Conference on Tools with Artificial Intelligence (ICTAI) established the C.V. Ramamoorthy Best Paper Award which has been awarded annually to the best research paper at the ICTAI Conference.

In addition to his beloved wife of 58 years, Daulat Ramamoorthy, Professor Ramamoorthy's survivors include their three children, Maya, Sonia, and Vijay, and six grandchildren.

Farokh Bastani  
Phillip Sheu