

E. V. Krishnamurthy (1934–2012)

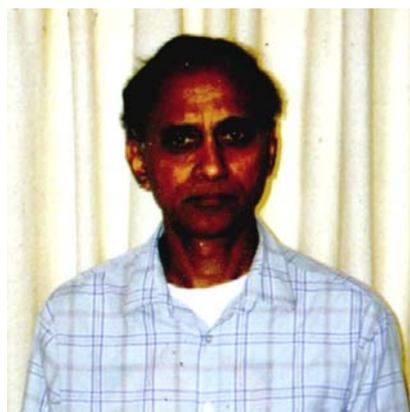
Edayathumangalam Venkatarama Krishnamurthy was born on 18 June 1934 in Ariyalur, Tamil Nadu. He took his B Sc and M Sc degrees from University of Madras. He started his Ph D under G. N. Ramachandran (then at the University of Madras) as a part-time doctoral student while he was working as an instrumentation technologist. As part of the thesis completed in 1959, he built an analogue computer for solving linear simultaneous equations and eigen value problems. The machine was named 'Lilavati' and was capable of solving 6×6 matrix equations. The work not only contributed to solving iterative matrix analysis problems, but also contributed towards novel circuit design using optimal (minimal) electronic components.

In 1960, Krishnamurthy took a position of Reader in Indian Statistical Institute (ISI), Kolkata and started working with the group that was designing and developing a third-generation digital computer ISIJU (one of the two early efforts on building digital computers after ENIAC/EDVAC in India). One of his principal contributions was in the development of fast division algorithms that finds references in the monumental works of Donald E. Knuth (*The Art of Programming, Vol. I-II*). On lien from ISI, he worked for two years at the Institute of Computer Research, University of Chicago with N. Metropolis and contributed to the fast arithmetic unit design for Maniac III.

From computer arithmetic, Krishnamurthy moved on to numerical and statistical computational techniques at ISI and developed a curriculum for computer science. During 1969, he worked at the Weizmann Institute of Science, Rehovot, Israel, where he worked again on the design of the fourth-generation computer Golem B. During 1970, he worked at the Department of Computer Science at Technion, Israel, during which period he contributed significantly towards the development of hardware–software algorithms and microprogramming.

Krishnamurthy then moved to the Department of Applied Mathematics at the

Indian Institute of Science (IISc), Bangalore in 1970. He worked on diverse areas such as numerical analysis, image processing, image reconstruction, chemical information system design, etc. Using finite field and p -adic arithmetic, he contributed to the development of error-free arithmetic using number theoretic transformations. Several papers as well as two



books have been published on these topics. *Methods and Applications of Error-Free Computations* jointly with R. T. Gregory and *Error-Free Polynomial Matrix Computations* (both from Springer-Verlag) are widely referred books in numerical analysis. His another significant work has been on reconstruction of images from different projections (a problem inspired by the early pioneering work of A. Lakshminarayanan and G. N. Ramachandran) using an algebraic approach. Another novel work of his was in the area of chemical information system design. In this work, he developed a notation called ALWIN (algorithmic Wiswesser notation for organic compounds). This found wide applications in industry using chemical documentation. In fact, he was invited to work at ASTRA, Bangalore on sabbatical from IISc, where he contributed towards the design of chemical information system design.

In all his studies, one can see novelty, originality and depth with a common hallmark of algorithmic aspects of computing. His *Introduction to Theoretical*

Computer Science was one of the earliest books that has been widely used in colleges and universities for teaching computer science. During his stay at IISc between 1970 and 1984, he guided 12 Ph Ds and 18 MS, and served in various capacities like Chairman of the Department of Applied Mathematics, Dean of Faculty of Science, etc.

Krishnamurthy has contributed immensely to research and education worldwide. Under UNESCO programme, he was instrumental in setting up the Computer Science Department at the University of Lagos, Nigeria. From IISc, he moved to University of Waikato, New Zealand where he worked as Head of the Computer Science Department between 1984 and 1991. During this period, he wrote a book, *Parallel Processing: Principles and Practice* (Addison Wesley) and another on *Transaction Processing Systems* jointly with V. K. Murthy (Prentice-Hall). After his sojourn in New Zealand, he worked at CSIRO, Canberra, Australia as a Professional Fellow from 1991 to 1999 and thereafter as an Emeritus Fellow.

Krishnamurthy has won several awards and recognitions. He was elected a Fellow of the Indian Academy of Sciences in 1972 and was the recipient of the Shanti Swarup Bhatnagar Award in Mathematics in 1978.

Krishnamurthy was one of the most enthusiastic and passionate researchers who excited people on algorithm aspects of computing in India. In his passing away the country has lost a doyen who was an acknowledged expert in computer science and who contributed immensely to areas like computer arithmetic/organization, numerical analysis, image processing, chemical information system design and parallel computing.

He passed away in Canberra on 26 October 2012 and is survived by two sons.

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