

Lawrence R. Rabiner

Lawrence Rabiner was born in Brooklyn, New York, on September 28, 1943. He received the S.B., and S.M. degrees simultaneously in June 1964, and the Ph.D. degree in Electrical Engineering in June 1967, all from the Massachusetts Institute of Technology, Cambridge Massachusetts.

From 1962 through 1964, Dr. Rabiner participated in the cooperative program in Electrical Engineering at AT&T Bell Laboratories, Whippany and Murray Hill, New Jersey. During this period Dr. Rabiner worked on designing digital circuitry, issues in military communications problems, and problems in binaural hearing. Dr. Rabiner joined AT&T Bell Labs in 1967 as a Member of the Technical Staff. He was promoted to Supervisor in 1972, Department Head in 1985, Director in 1990, and Functional Vice President in 1995. He joined the newly created AT&T Labs in 1996 as Director of the Speech and Image Processing Services Research Lab, and was promoted to Vice President of Research in 1998 where he managed a broad research program in communications, computing, and information sciences technologies. Dr. Rabiner retired from AT&T at the end of March 2002.

Dr. Rabiner has pioneered a range of novel algorithms for digital filtering and digital spectrum analysis. The most well known of these algorithms are the Chirp z-Transform method (CZT) of spectral analysis, a range of optimal FIR (finite impulse response) digital filter design methods based on linear programming and Chebyshev approximation methods, and a class of decimation/interpolation methods for digital sampling rate conversion. In the area of speech processing, Dr. Rabiner has made contributions to the fields of speech synthesis and speech recognition. Dr. Rabiner built one of the first digital speech synthesizers that was able to convert arbitrary text to intelligible speech. In the area of speech recognition, Dr. Rabiner was a major contributor to the creation of the statistical method of representing speech that is known as hidden Markov modeling (HMM). Dr. Rabiner was the first to publish the scaling algorithm for the Forward-Backward method of training of HMM recognizers. His research showed how to successfully implement an HMM system based on either discrete or continuous density parameter distributions. The ultimate payoff of Dr. Rabiner's research was a series of speech recognition systems that went into deployment by AT&T to enable automation of a range of 'operator services' that previously had been carried out using live operators. One such system, called the Voice Recognition Call Processing (VRCP) system, automated a small vocabulary recognition system (5 active words) with word spotting and barge-in capability, and was able to achieve extremely high performance and reliability. It resulted in savings of several hundred millions of dollars annually for AT&T.

Dr. Rabiner is co-author of the books "Theory and Application of Digital Signal Processing" (Prentice-Hall, 1975), "Digital Processing of Speech Signals" (Prentice-Hall, 1978), "Multirate Digital Signal Processing" (Prentice-Hall, 1983), and "Fundamentals of Speech Recognition" (Prentice-Hall, 1993).

Dr. Rabiner is a member of Eta Kappa Nu, Sigma Xi, Tau Beta Pi, the National Academy of Engineering, the National Academy of Sciences, and a Fellow of the Acoustical Society of America, the IEEE, Bell Laboratories, and AT&T. He is a former President of the IEEE Acoustics, Speech, and Signal Processing Society, a former Vice-President of the Acoustical Society of America, a former editor of the ASSP Transactions, and a former member of the IEEE Proceedings Editorial Board.