Statistical Engineering Division Seminar

Thursday March 16, 1995 11:00 am

Polymers Bldg., Room A149
NIST
Gaithersburg, MD

Limits and Rates of Convergence for the Distribution of Search Cost Under the Move-to-Front Rule

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We derive upper and lower bounds on total variation distance to stationarityfor the distribution of search cost under the move-to-front (MTF) rule for self-organizing lists with i.i.d. record requests. These enable us to obtain sharp rates of convergence for several standard examples of weights, including Zipf's law and geometric weights, as the length of the list becomes large. The upper bound also shows that a number of moves of the order of the length of the list is uniformly sufficient for near-stationarity over all choices of weights. Concerning the stationary search cost distribution itself, we use arepresentation obtained by considering the continuized MTF Markov chain to derive, for each of the standard examples, the asymptotic distribution for long lists.

James Allen Fill obtained a B.S. degree with a double major in Mathematics and Statistics from the University of Illinois, and M.S. and Ph.D. degrees from the University of Chicago. He has taught at Stanford University and M.I.T. and is currently Associate Professor of Mathematical Sciences at The Johns Hopkins University. Professor Fill is Associate Editor of Annals of Applied Probability . His mathematical interests focus on probability and stochasticprocesses, especially the analysis of Markov chains.

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