

## **Updating Markov Chains**

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Abstract: An iterative algorithm based on aggregation/disaggregation principles is presented for updating the stationary distribution of a finite homogeneous irreducible Markov chain. The focus is on large-scale problems of the kind that are characterized by Google's PageRank application, but the algorithm can be effective in more general contexts. The algorithm allows for changes to the transition probabilities as well as for the creation or deletion of states. In addition to discussing the rate of convergence, it will be shown that the algorithm always converges independent of the starting vector.