

Maximization of Sample Gathering in Clusters with Slepian-Wolf Coding

T. Wang, W. Heinzelman, A. Seyedi and A. Vosoughi
University of Rochester

Abstract

A cluster of network nodes utilizing Slepian-Wolf distributed source coding is considered. Under energy constraints in the nodes, a low complexity algorithm to find the optimal configuration (including source coding rates and transmit durations) maximizing the number of samples collected by the cluster is proposed. Exact closed form solutions are derived when the fusion center is not energy constrained. In presence of an energy constraint for the fusion center, an approximate linear programming formulation is obtained. A near-optimal solution is then derived for some special cases. Numerical results demonstrate that the proposed algorithms show significant gain.