
NICHOLAS RICHARDSON, University of British Columbia

Density Separation with Tensor Factorization

The nonnegative Tucker-1 tensor factorization is used to separate mixtures of probably densities. A kernel density estimation transforms raw samples into compressed and discretized densities. An implementation of a specialized block coordinate descent algorithm that enforces the required simplex constraints is guaranteed to converge to Nash equilibria. Numerical experiments on real geological data, using our open source Julia implementation, illustrate the model's effectiveness at separating the density mixtures. Portability of the method to other applications like spacial transcriptomics and audio decomposition is discussed.