

## **Accelerating the EM algorithm for mixture density estimation**

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The Expectation-Maximization (EM) algorithm is widely used in computational statistics for numerically approximating maximum-likelihood estimates in the context of missing information. This talk will focus on the EM algorithm applied to estimating unknown parameters in a (finite) mixture density, i.e., a probability density function (PDF) associated with a statistical population that is a mixture of subpopulations, using "unlabeled" observations on the mixture. In the particular case when the subpopulation PDFs are from common parametric families, the EM algorithm becomes a fixed-point iteration that has a number of appealing properties. However, the convergence of the iterates is only linear and may be unacceptably slow if the subpopulations in the mixture are not "well-separated" in a certain sense. In this talk, I will review the EM algorithm for mixture densities, discuss applying Anderson acceleration to improve the convergence of the iterates, and report on numerical experiments involving mixtures of multivariate normal (Gaussian) PDFs.