

Scalable particle-based alternatives to EM

Abstract: Building on (Neal and Hinton, 1998), where the problem tackled by EM is recast as the optimization of a free energy functional on an infinite-dimensional space, we obtain three practical particle-based alternatives to EM applicable to broad classes of models. All three are derived through straightforward discretizations of gradient flows associated with the functional. The novel algorithms scale well to high-dimensional settings and outperform existing state-of-the-art methods in numerical experiments.