Comparison of ML and EM Estimation of Gaussian Mixtures

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Contents

0.1 Introduction

historical background. 1894. 1977 Dempster et. al., modern EM. todays standing asdf

here testing bibliography [MP00] [MLR19]

introduce mixture model, EM in general form and give scetch of the mechanism in EM

introducing the Idea, EM but better parameter construction in the case of gaussian multivariate mixtures.

0.2 EM and ML

introduce EM now in special case for gaussian mixture. what parameters are to be estimated and how.

here talk about algo

developing the software,

$$\tau_i(y_j;\Psi) = \pi_i\phi(y_j;\mu_i,\Sigma_i)/\sum_{h=1}^{g}\pi_h\phi(y_j;\mu_h,\Sigma_h)$$

$$\mu_i^{(k+1)} = \sum_{j=1}^{n}\tau_{ij}^{(k)}y_j/\sum_{j=1}^{n}\tau_{ij}^{(k)}$$

0.3 Methodology

how the comparison was measured

0.4 Results

0.5 Discussion

whether our plan works out or not. i.e. is it faster using cholesky

Bibliography

[MLR19] Geoffrey J. McLachlan, Sharon X. Lee, and Suren I. Rathnayake. Finite mixture models. *Annual Review of Statistics and Its Application*, 6(1):355–378, 2019.

[MP00] Geoffrey McLachlan and David Peel. *Finite Mixture Models*. Wiley Series in Probability and Statistics. John Wiley & Sons, Inc., New York, 2000.