

Small Exercises 11

Inference in latent variable models

Problem 1: Explain the relation between training via the EM algorithm and training by variational auto-encoding in 140 characters or less.

Problem 2: Explain why the posterior distribution of the latent variables given the observed data is of such high interest in machine learning.

Problem 3: EM and variational auto-encoding are iterative training algorithms. Name problems that are caused by such procedures.

Problem 4: What is the qualitative difference between the latent space when choosing (i) a mixture of Gaussians and a (ii) variational auto-encoder for modelling the MNIST data set as in the slides?