

Small Exercises 10

Unsupervised Learning

These small exercises are meant to prepare the inverted classroom lecture. Keep your answers short: two or three sentences, sometimes even less, should suffice. The purpose is to shape or question your intuition, not your mathematical rigour.

Your solutions are submitted *online* in a form found under the link at the bottom of the page. The submission deadline is *before* the respective inverted classroom!

The homework exercise sheet is due later.

Problem 1: What makes the learning of a mapping between latents z and inputs x so hard?

In the beginning we don't know which z belongs to which x . This requires an inverse of the mapping from z to x , but sometimes we also don't know the mapping from z to x .

Problem 2: Why do the individual data-dimension variances make FA better than PPCA?

Because each data-dimension might have a different scaling.

Problem 3: What happens if you use a Gaussian prior for ICA?

Then it becomes a weird version of FA, where the additive noise in the data-dimensions has a variance of 0.