

Small Exercises 4

Multivariate Gaussian

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: Why do we use the Cholesky decomposition for sampling and density estimation?

Problem 2: Parts of the density function of a multivariate Gaussian can be interpreted as the Mahalanobis distance. What does this imply for the shape of the Gaussian?

Problem 3: What is the interpretation for inverting the covariance matrix when evaluating the density function of a Gaussian?

Problem 4: In the lecture we stated that the Gaussian distribution has the highest entropy. But doesn't the uniform distribution have the highest entropy?

Problem 5: What does the MLE solution of a Gaussian remind you of?