

Small Exercises 7

Neural networks

These exercises are meant as preparation for the inverted classroom lecture. Keep your answers short: two or three sentences, sometimes even less, should suffice.

Problem 1: Why do we use basis functions in neural networks? What purpose do they serve?

Problem 2: What is “deep” about deep neural networks?

Problem 3: When do we use a Bernoulli likelihood assumption in a neural network?

Problem 4: How can you compute the gradient of the weights in a neural network?

Problem 5: Give one advantage and disadvantage each for stochastic vs. batch learning.

Problem 6: Of which update (give the approximate number) do you use the corresponding neural network weights (i.e., when do you “stop training”)? Explain your answer. Relate your answer to the below figure, in which the data is separated in a training set, a validation set, and a test set.

