Foundations of Statistical Modeling

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Spring term 2024
Exercise sheet 6, submit on Monday May 6th, 2024 on Moodle
Your name:

1. Correlation, Scatter Plot [5 Points]

Choose from your data set 2 numerical features where you have at least 100 data in a discrete DVS   S (if it is a continuous S, choose a bin of some width a). Describe the RV function you have chosen and define the DVSs $\{S_1, S_2\}$. Plot the marginal distribution of both RV features, the scatter plots for the pair of features, and give their Pearson correlation. Discuss the result and conclude whether the two features are correlated, anticorrelated or uncorrelated.

2. Joint pmf [5 Points]

Plot for the 2 numerical features the joint pmfs in a 3D plot. Find the standard deviations σ_1, σ_2 and the covariance of the two features and use them as hyperparameters for a 2-variate Gaussian. Plot that 2-variate Gaussian, is it a good statistical model for the two features?