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Factorized Latent Variable Models

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Abstract - Latent variable models is a natural representation for many types of data in machine learning. Parametrising the distribution of the observed data by a latent variable is an attractive approach as it allows us to encode a preference towards specific generating processes and naturally deals with missing data. However in many inference problems only a small portion of the variance of the data distribution is relevant for the task at hand. This means that the likelihood of the data does not reflect the task well, or in direct terms the latent parameter does not focus on representing the task relevant variations required to solve the task.

In this talk we will discuss this problem and show how using structured latent variable models some of these problems can be addressed. We will show examples using two different non-parametric generative approaches, Gaussian processes for continuous data and Dirichlet processes for discrete data.