

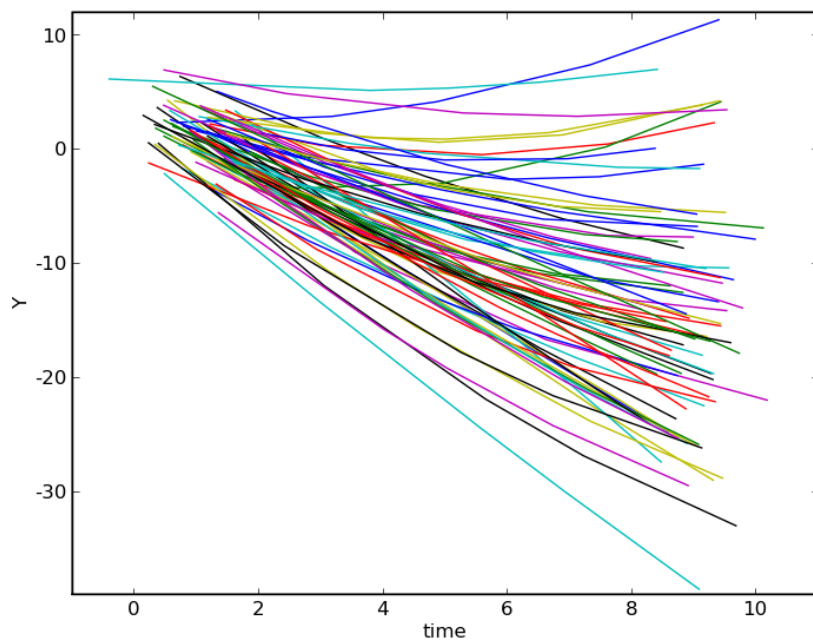
Math 314 May 2008 — Homework 3

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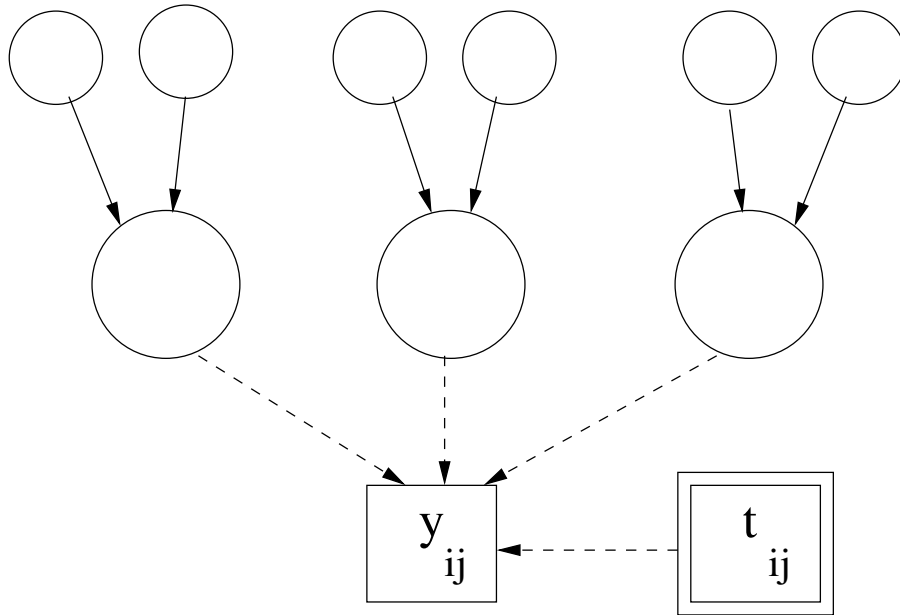
May 12, 2008

Markov Chains are an ideal way to analyze the posterior distribution of parameters given a set of data. We will look at a particular data set, similar to that in the paper that we read in class, and your task will be to estimate the parameters that went into making the data.

The data is as follows: for 75 individuals, we have measurements of the same quantity at five points in time.



These measurements depend on time and on some parameters that describe the properties of the population. We won't consider measurement error in this example. The graphical structure of the data is



where solid arrows denote probabilistic relationships and dashed arrows are deterministic relationships.

Your Task: Build a Markov Chain to sample from the posterior density of the unspecified parameters in the model. Run the chain for a long enough time to generate samples to build up a distribution for the parameters and make a guess at the model that was used to create the data. Pay attention to issues of burn-in, acceptance rate and mixing in your Markov Chain