CBB540 - Spring 2014 - Homework 1

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(1) How do you model linkage disequilibrium while modeling population structure?

(2) How do you set K in the population structure model?

(3) Give some examples of distance metric based methods in inference of population structure.

(4) In a GWAS, how does one correct for population structure?

Consider the following model:

$$f(x, \theta) \propto \theta^x (1 - \theta)^{N-x},$$

where $\theta \in [0, 1]$ and $x = \{0, 1, 2, ..., N\}$.

(5) How would you use Gibb's sampling to sample from the joint distribution?

(6) If my prior on θ is $p(\theta) = 2 \times I(.5 \leq \theta \leq 1)$, how can I sample the joint distribution?