The MCMC revolution - Synthesis and Opinion

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1 Synthesis

Persi Diaconis as a magician and statistician appears to has a very creative point of view. In his works he has used the creativity and intelligence of his students which has led him to develop interesting projects such as the "Markov Chains". The interesting point starts with computing $Pl(f)$ where, Diaconis shows is the way to find a solution in deciphering penal codes.

As we saw in class, the Markov's probability indicates the probability of transition in the future depend on the current state and not on the history of the process. These probabilities of transition between states depend exclusively on states and not on time. The methylene blue example shows clearly that we must think in Markov the Chains as a continuous states.

Something that calls my the attention in this model, is the following question:

How long must the chain be run to be very close to Π?

–I think it will always depend on the case being analyzed, as it could be fast or slow, but the size of the jump is also important.

Figure 1: Methylene Blue

2 Opinion

I think the use of simulation for high-dimensional intractable computations has revolutionized applied mathematics and statistics. Designing, improving and understanding the new packages leads to (and leans on) fascinating mathematics, from representation theory through useful analysis.

"Science is to understand your way.."