

# The Fall of Gibbs Sampling

Donglai Wei

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## 0) Expectation

Thought Gibbs sampling works better than ME search on the small set of data(40 restaurants,5\*5,10 bars), we expect for a larger data set (1000 restaurants,5\*5,10 bars):

- 1)Gibbs Sampling will have a hard time jumping out of the local maxima
- 2)The Split move in ME search will instead benefit from the information shared across more restaurants

## 1) Experiment

1000 restaurants,5\*5,10 bars

### i) Ground Truth

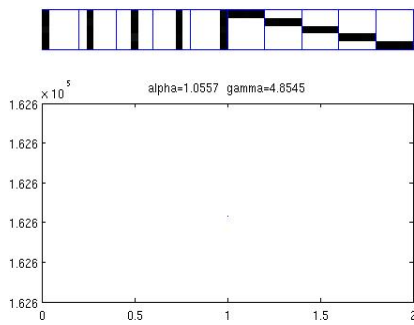


Figure 1: Ground Truth:Table Config for the first 40 restaurants

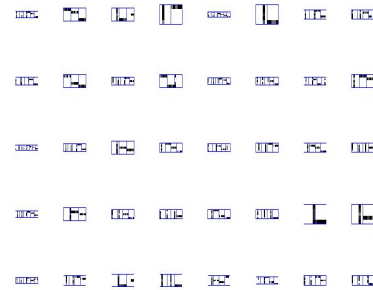


Figure 2: Ground Truth:Dish Config and -log Probability

### ii) Gibbs Sampling

### iii) ME search after Ground Truth and Gibbs Sampling

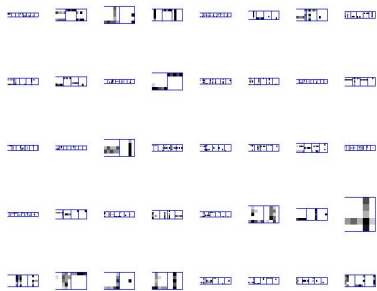


Figure 3: Gibbs Sampling:Table Config for the first 40 restaurants

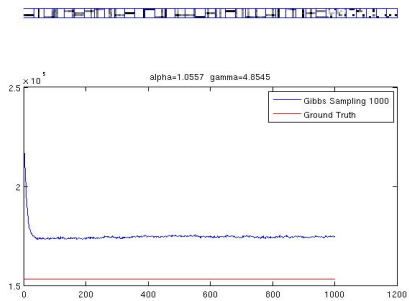


Figure 4: Gibbs Sampling:Dish Config and -log Probability

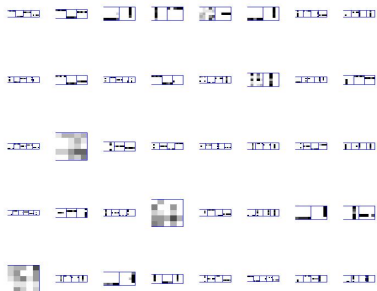


Figure 5: ME after Ground Truth:Table Config for the first 40 restaurants

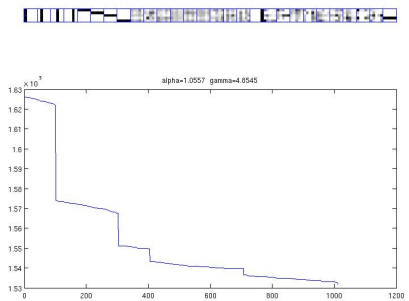


Figure 6: ME after Ground Truth:Dish Config and -log Probability

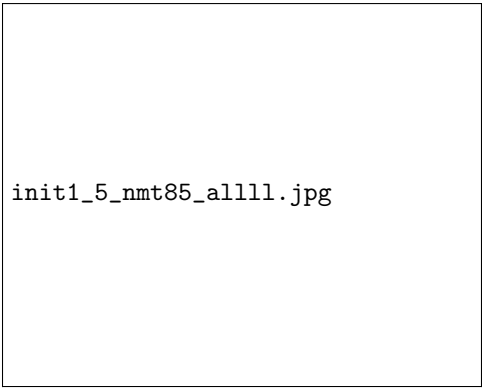


Figure 7: ME after Gibbs Sampling:Table Config for the first 40 restaurants

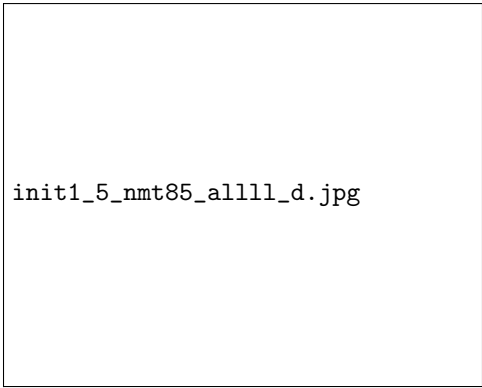


Figure 8: ME after Gibbs Sampling:Dish Config and -log Probability