

Wed, March 31

Lecture #28

Big Idea: Allowing the constraints to be violated, but penalizing.

Sudoku: Score = # of bad rows
+ # of bad cols
+ # of bad squares

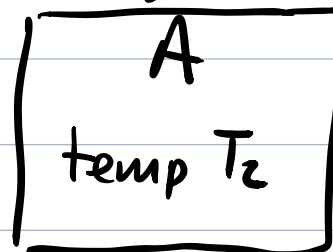
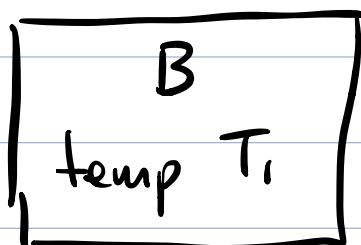
goal: minimize the score

Parallel Tempering:

Instead of running one system that cools over time, run multiple systems each at constant (but different temperatures).

These are swap solutions.

intuition: Person A is very good at exploring
Person B is very good at exploiting



sol S_1

sol S_2

Should they swap?

Define $E_i = \text{score}(S_i)$.

At any point in time, swap with probability

$$p = \min(1, e^{\Delta}),$$

where

$$\Delta = (E_2 - E_1) \cdot \left(\frac{1}{T_1} - \frac{1}{T_2} \right)$$