Break & Quiz

Q 1.1: Hill climbing and SGD are related by
(i) Both head towards optima
(ii) Both require computing a gradient
(iii) Both will find the global optimum for a convex problem

- A. (i)
- B. (i), (ii)
- C. (i), (iii)
- D. All of the above
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- A. (i) (No: (iii) also true since convexity->local optima are global)
- B. (i), (ii) (No: (ii) is false. Hill-climbing looks at neighbors only.)
- C. (i), (iii)
- D. All of the above (No: (ii) false, as above.)
Q 2.1: Which of the following is likely to give the best cooling schedule for simulated annealing?

A. $\text{Temp}_{t+1} = \text{Temp}_t \times 1.25$
B. $\text{Temp}_{t+1} = \text{Temp}_t$
C. $\text{Temp}_{t+1} = \text{Temp}_t \times 0.8$
D. $\text{Temp}_{t+1} = \text{Temp}_t \times 0.0001$
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Q 2.1: Which of the following is likely to give the best cooling schedule for simulated annealing?

A. $\text{Temp}_{t+1} = \text{Temp}_t \times 1.25$ (No, temperature is increasing)
B. $\text{Temp}_{t+1} = \text{Temp}_t$ (No, temperature is constant)
C. $\text{Temp}_{t+1} = \text{Temp}_t \times 0.8$
D. $\text{Temp}_{t+1} = \text{Temp}_t \times 0.0001$ (Cools too fast---basically hill climbing)
**Break & Quiz**

**Q 2.2:** Which of the following would be better to solve with simulated annealing than A* search?

i. Finding the smallest set of vertices in a graph that involve all edges

ii. Finding the fastest way to schedule jobs with varying runtimes on machines with varying processing power

iii. Finding the fastest way through a maze

• A. (i)
• B. (ii)
• C. (i) and (ii)
• D. (ii) and (iii)
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ii. Finding the fastest way to schedule jobs with varying runtimes on machines with varying processing power

iii. Finding the fastest way through a maze

• A. (i)
• B. (ii)
• C. (i) and (ii)
• D. (ii) and (iii)
Q 2.2: Which of the following would be better to solve with simulated annealing than A* search?

i. Finding the smallest set of vertices in a complete graph (i.e., all nodes connected)

ii. Finding the fastest way to schedule jobs with varying runtimes on machines with varying processing power

iii. Finding the fastest way through a maze

• A. (i) (No, (ii) better: huge number of states, don’t care about path)
• B. (ii) (No, (i) complete graph might have too many edges for A*)
• C. (i) and (ii)
• D. (ii) and (iii) (No, (iii) is good for A*: few successors, want path)