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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Break & Quiz

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(iii) Both will find the global optimum for a convex problem

- 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.)

Break & Quiz

Q 2.1: Which of the following is likely to give the best cooling schedule for simulated annealing?

A. $Temp_{t+1}= Temp_t * 1.25$
B. $Temp_{t+1}= Temp_t$
C. $Temp_{t+1}= Temp_t * 0.8$
D. $Temp_{t+1}= Temp_t * 0.0001$

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Break & Quiz

Q 2.1: Which of the following is likely to give the best cooling schedule for simulated annealing?

A. $Temp_{t+1} = Temp_t * 1.25$ (No, temperate is increasing)
B. $Temp_{t+1} = Temp_t$ (No, temperature is constant)
C. **$Temp_{t+1} = Temp_t * 0.8$**
D. $Temp_{t+1} = Temp_t * 0.0001$ (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)

Break & Quiz

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i. Finding the smallest set of vertices in a graph that involve all edges
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iii. Finding the fastest way through a maze

- A. (i)
- B. (ii)
- **C. (i) and (ii)**
- D. (ii) and (iii)

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 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)