BerkeleyX: CS190.1x Scalable Machine Learning

MODEL COMPLEXITY (1 point possible)

Imagine we have two regression models, where model A has weights (1.0, 2.0, 1.5) and model B has weights (0.0, 1.0, 0.75). If these two models have the same training error, then under the ridge regression optimization criterion with a positive value for the regularization parameter, which model is more favorable?

- ○ Model A
- ○ Model B
- ○ The two models are equally favorable

?

CHECK

CLOSED-FORM SOLUTIONS (1 point possible)

Select the machine learning techniques that have closed-form solutions:

- ☐ Linear Regression
- ☐ Gradient Descent
- ☐ Ridge Regression

?

Note: Make sure you select all of the correct options—there may be more than one!

CHECK

LINEAR REGRESSION COMPLEXITY (1 point possible)

According to the lecture, which of the following statements about the time and space complexity of linear regression is accurate?:

- [ ] O(nd^2 + d^3) computation
- [ ] O(nd + d^2) computation
- [ ] O(nd + d^2) storage
- [ ] O(nd^2 + d^3) storage

?

Note: Make sure you select all of the correct options—there may be more than one!

CHECK

DATA GROWTH (1 point possible)

Which of the following techniques reduce the computational or storage burden when dealing with massive amounts of data?

- [ ] Using sparse representations
- [ ] Low-rank approximation
- [ ] Gradient descent

?

Note: Make sure you select all of the correct options—there may be more than one!

CHECK

GRADIENT DESCENT (1 point possible)

Select the true statements about gradient descent:

- [ ] Iterative algorithm
- [ ] Convergence can be slow
- [ ] Can't be parallelized
- [ ] Always finds global minimum
- [ ] Requires communication across nodes

?

Note: Make sure you select all of the correct options—there may be more than one!

CHECK

SCALABLE ALGORITHMS (1 point possible)

Which of the following communication considerations impact the design of scalable learning algorithms?

- [ ] Memory throughput is only slightly higher than disk throughput
- [ ] Network throughput is substantially higher than disk throughput

- [ ] Memory throughput is substantially higher than both disk and network throughput

?

Note: Make sure you select all of the correct options—there may be more than one!

CHECK

LATENCY (1 point possible)

Select the true statements about latency:

- [ ] The ratio of memory latency to disk latency is similar in magnitude to the ratio of memory throughput to disk throughput.
- [ ] Memory access has lower latency than disk access
- [ ] You can amortize latency by sending updates frequently

?

Note: Make sure you select all of the correct options—there may be more than one!

CHECK