

Bootstrap, bagging, and PCA*(find and work with a partner)*

1. What is the runtime of bootstrapping, in terms of the number of trials T and the number of examples n ? Does the number of features p factor into the runtime?
2. With $n = 2$ training examples, how many unique datasets can I generate with bagging? What about $n = 3$?
3. Say I want to run PCA on a matrix of n examples with p features, and reduce the dimension from p to r (usually $r = 2$). What are the dimensions of the weight matrix W ? What are the dimensions of the transformed matrix?
4. In terms of n , p , and r , what is the runtime of each step of PCA? (you can skip the step related to computing eigenvalues and eigenvectors)