Combining classifiers

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Choosing a classifier

So many choices:

- Nearest neighbor
- Different generative models
- Linear predictors with different loss functions
- Different kernels
- Neural nets
- etc.

Can one **combine** them?
And get a classifier that is better than any of them individually?

Combining simple classifiers

1. No one classifier is going to be the final product.
   So why not keep the individual components simple?

2. How to train each constituent classifier?
   On the full training set?

3. The full (combined) models may get enormous.
   Is this bad for generalization?