

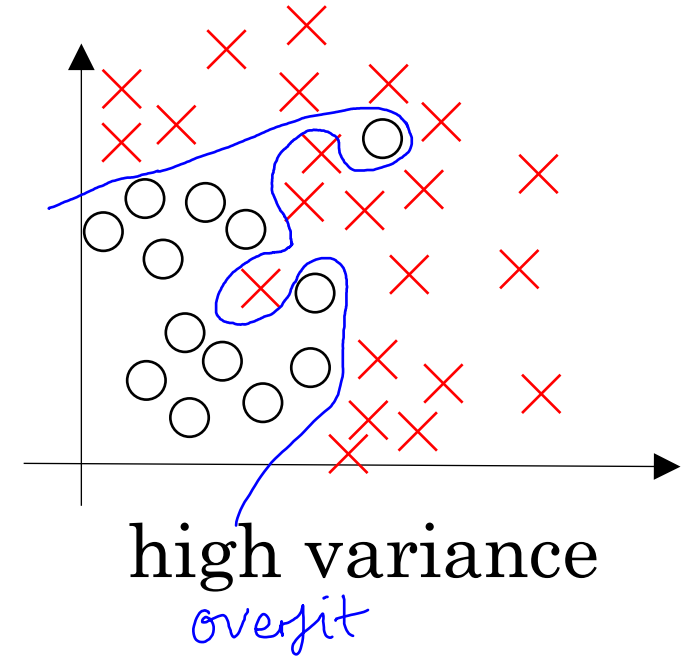
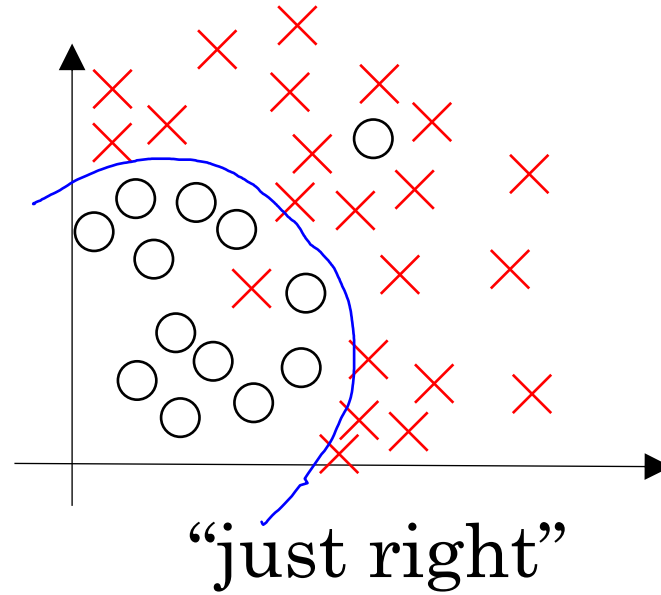
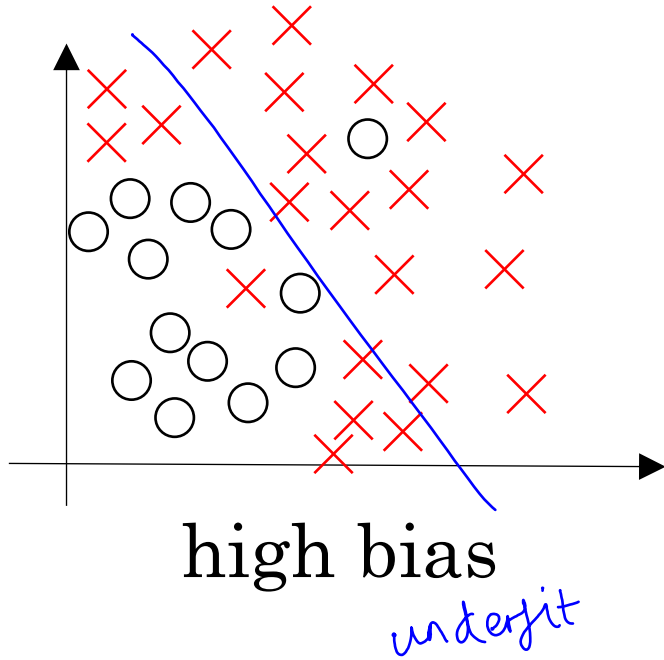


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Setting up your ML application

Bias/Variance

Bias and Variance



Bias and Variance

Cat classification



Train set error: 1%

Dev set error: 11%

(A)

} \Rightarrow overfit
high variance

(B)

15% } \Rightarrow underfit
16% } high bias

(C)

15% } high bias
30% } + high variance
 \Rightarrow model is too simple
+ was fit only
to training

(D)

Train error : 0.5% } low bias
Dev error : 2% } low var ✓

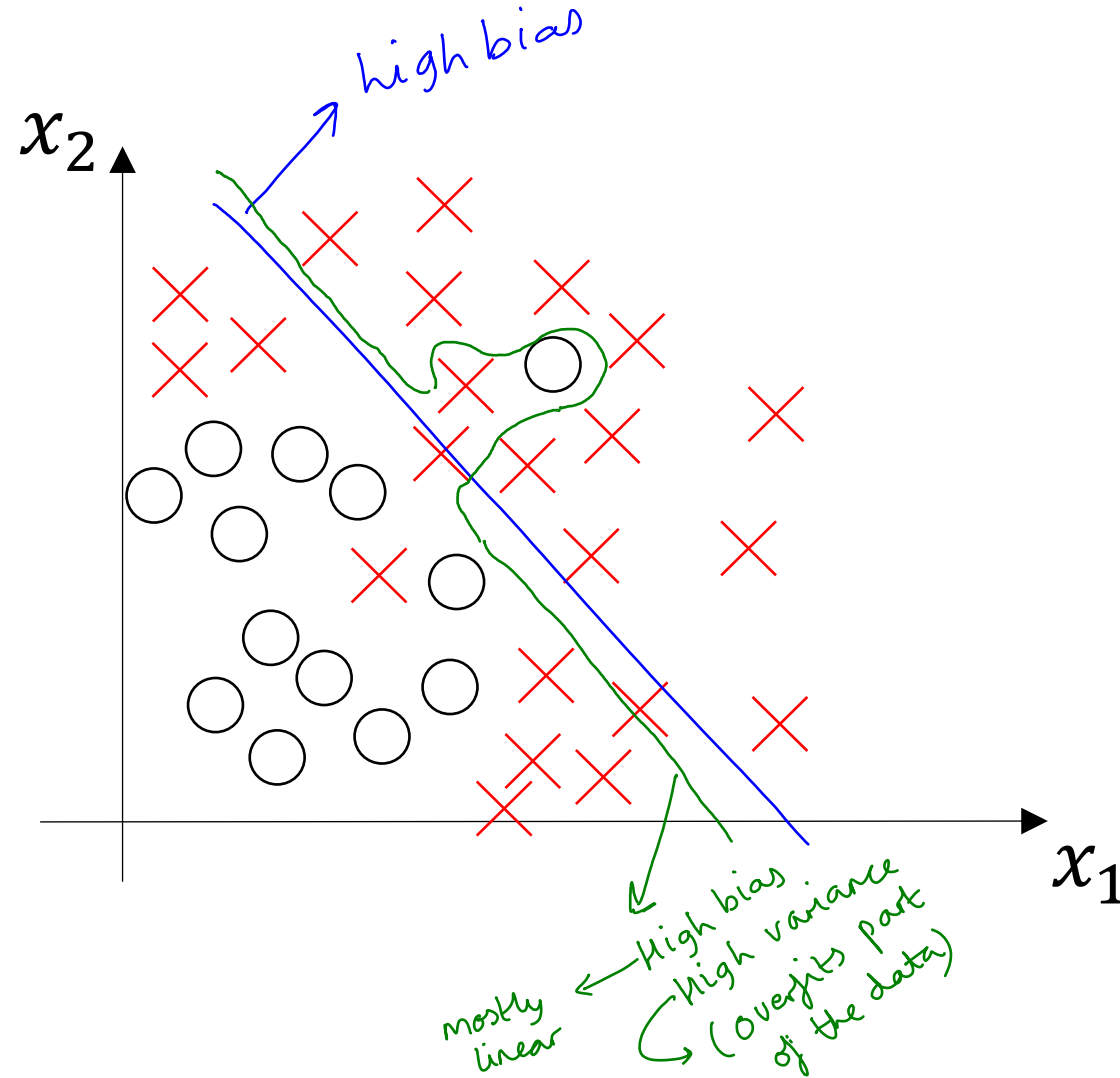
Humans can differentiate b/w cat & dog
almost 99%, ie, the best classifier
has 1% error

\Rightarrow Bayesian/Irreducible
error is 1%.

★ Say Images were super blurry, humans
make error 15%
of the time

If Bayesian error
was 15% & the only
model we had out
of the 4 were models
B & C, then Model B
would be (low bias, low var)
Model C \rightarrow overfitted model

High bias and high variance



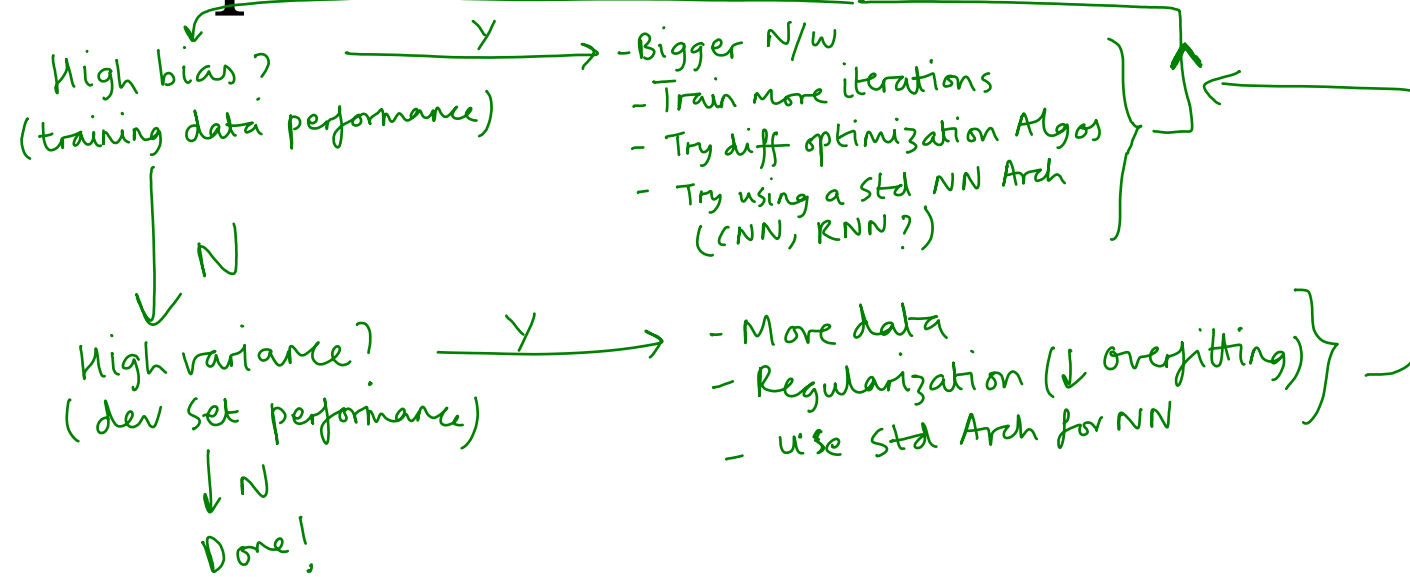


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Setting up your ML application

Basic “recipe” for machine learning

Basic “recipe” for machine learning



Some obvious observations

- ① If high bias model, getting more data wouldn't help
- ② //ly, high variance model won't get better w/ more iterations

- Earlier, we had the bias variance tradeoff, If 1 ↑, other ↓
- Now If we have bigger N/w & More data, we can ↓ bias & var w/o hurting the other!

Basic recipe for machine learning