



deeplearning.ai

Mismatched training
and dev/test data

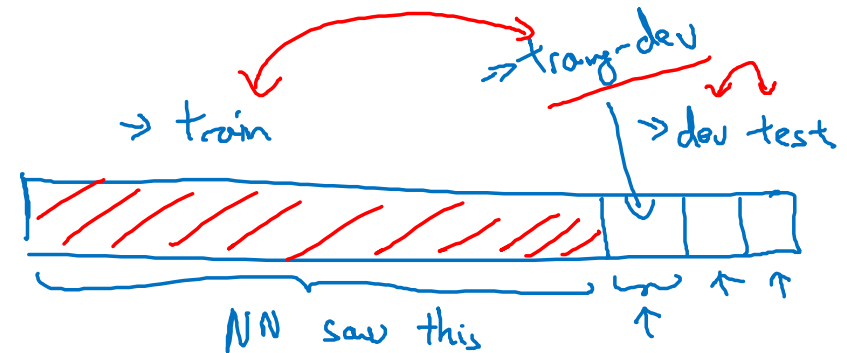
**Bias and Variance with
mismatched data
distributions**

Cat classifier example

Assume humans get $\approx 0\%$ error.

Training error 1%
 Dev error 10%

Training-dev set: Same distribution as training set, but not used for training



Training error	1%		1%
→ Training-dev error	9%	↑ Variance	1.5%
→ Dev error	10%		10%
			↓ Data mismatch
		Variance	
Human error - - -	0%	↑ Avoidable bias	10%
Training error	10%	↓ Bias	10%
Training-dev error	11%	↑ Variance	11%
Dev error	12%	↑ Data mismatch	20%
	Bias		Bias + Data mismatch

Andrew Ng

Bias/variance on mismatched training and dev/test sets

Human level	4%		4%
Training set error	7%	↑ avoidable bias	7%
Training-dev set error	10%	↑ variance	10%
→ Dev error	12%	↑ data mismatch	6%
→ Test error	12%	↑ degree of overfitting to dev set.	6%

More general formulation

Rearview mirror

	General speech recognition	Rearview mirror speech data.
Human level	"Human level" <u>4%</u>	<u>6%</u>
Error on examples trained on	 "Training error" 7%	 6%
Error on examples <u>not</u> trained on	 "Training-dev error" 10%	 "Dev/Test error" <u>6%</u>

avoidable bias

Variance

data mismatch