



deeplearning.ai

Mismatched training
and dev/test data

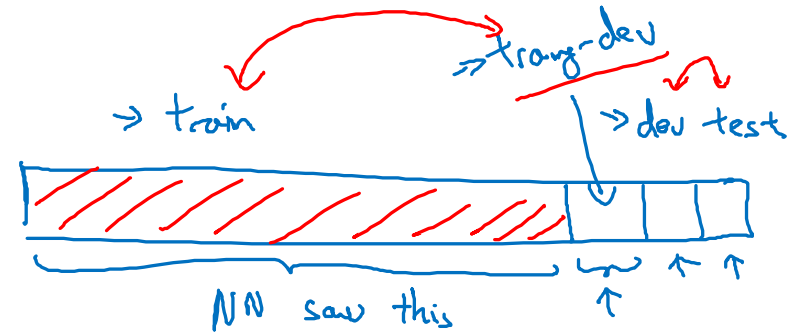
**Bias and Variance with
mismatched data
distributions**

Cat classifier example

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

Training error 1%
 Dev error 10% $\downarrow 9\%$

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% ↑ Avoidable bias
Training error	10%	↓ bias	10% ↓ variance
Training-dev error	11%		11% ↑ Data mismatch
Dev error	12%		20%
	Bias		Bias + Data mismatch

Andrew Ng

Bias/variance on mismatched training and dev/test sets

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

More general formulation

Recurrent mirror

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

↔ data mismatch ↔