



deeplearning.ai

# Mismatched training and dev/test data

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Bias and Variance with  
mismatched data  
distributions

# Cat classifier example

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

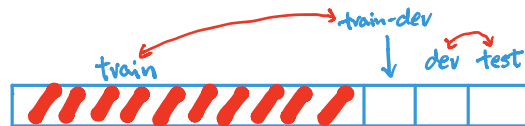
Training error

1%  
↓  
9%

Dev error

10%

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



Train error	1%	1%
Train-dev error	9%	1.5%
Dev error	10%	10%
	↑ Variance	↑ data mismatch

Human error	0%	0%
Train error	10%	10%
Train-dev error	11%	11%
Dev error	12%	20%
	↑ Avoidable bias	↑ Avoidable bias
		↑ data mismatch

# Bias/variance on mismatched training and dev/test sets

Human level

Training set error

Training-dev error

Dev error

Test error

4%

↕ Avoidable bias

7%

↕ Variance

10%

↕ data mismatch

12%

↕ degree of overfitting to dev sets.

12%

4%

7%

10%

6%

6%

# More general formulation

Rearview mirror

