



deeplearning.ai

# Mismatched training and dev/test data

---

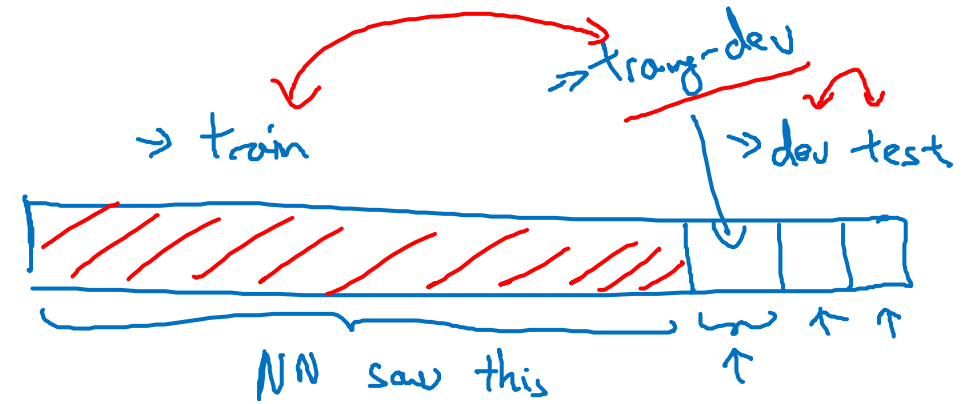
## Bias and Variance with mismatched data distributions

# Cat classifier example

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

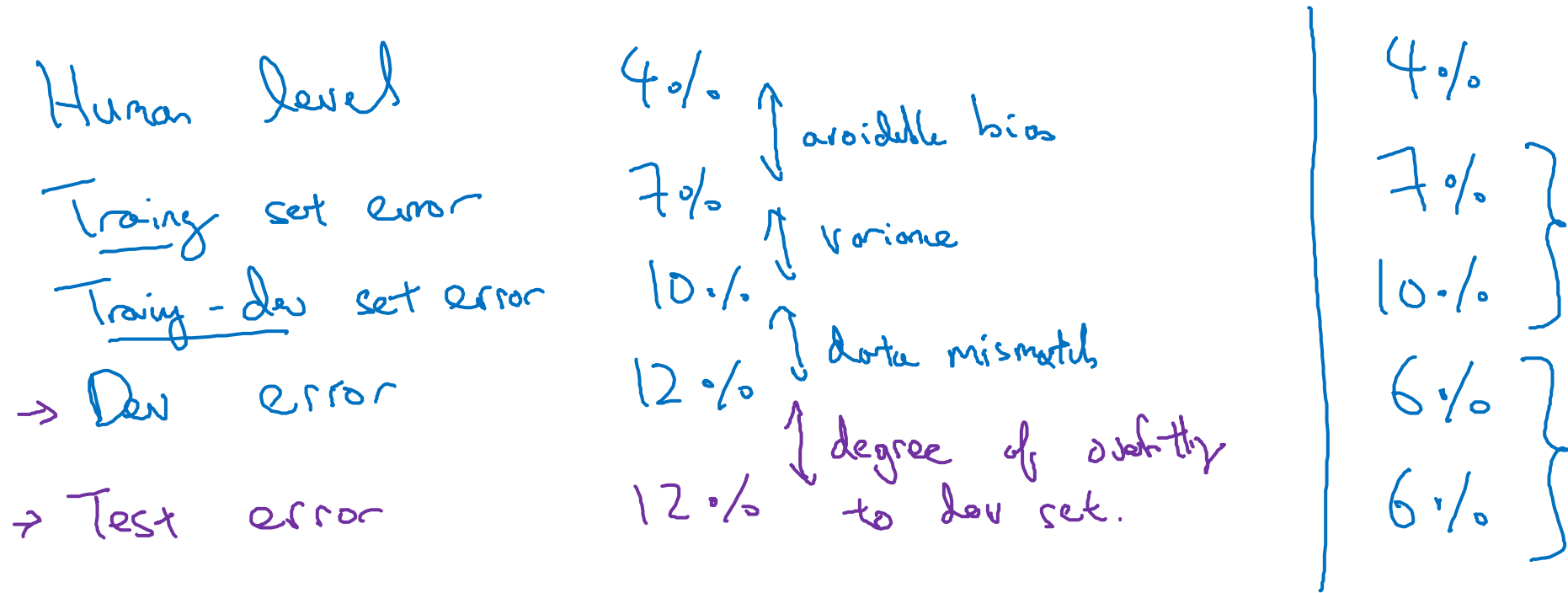
Training error .....  $1\%$   
 Dev error .....  $10\%$   $\downarrow 9\%$

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



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

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



# More general formulation

Residual mirror

