

Validation Sets and Generalization Gaps

Week 7 Video 3

A VEXING QUESTION

HOW CAN WE ESTIMATE THE
GENERALIZATION GAP?

ANSWER: HAVE A VALIDATION
SET!

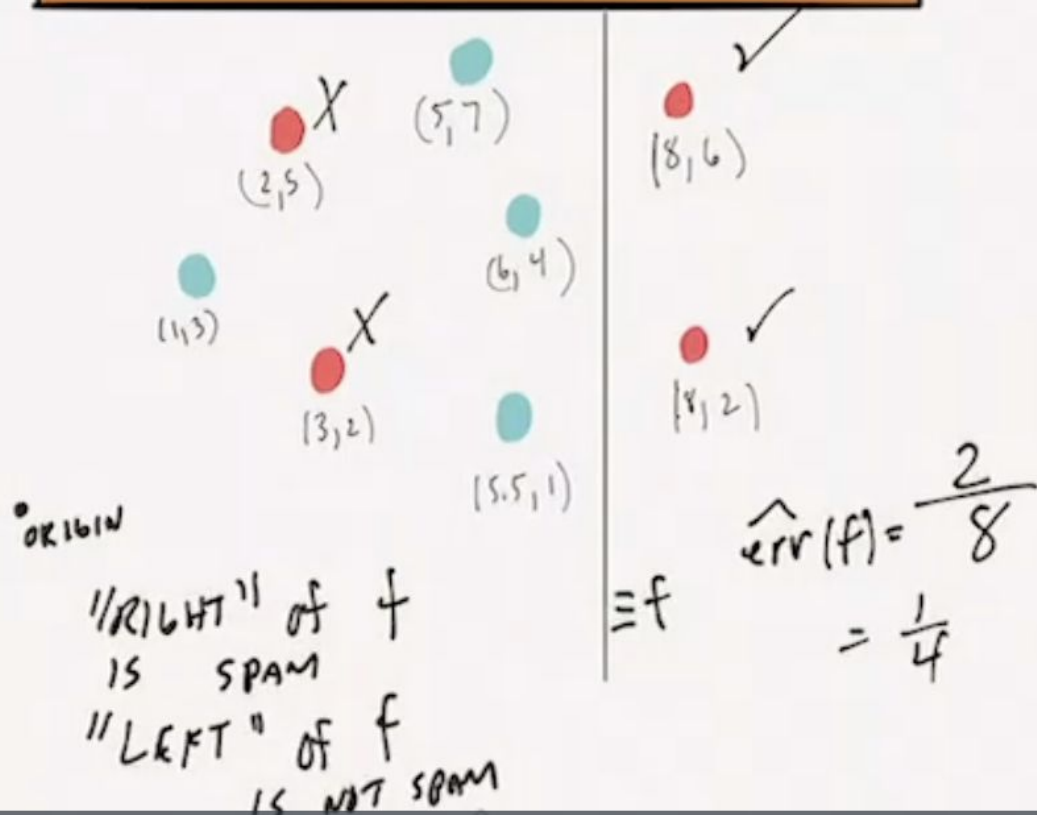
PERFORMANCE OF f
ON VALIDATION SET
USUALLY GOOD ESTIMATE OF
TRUE ERROR.



COMPRESSION / LEARNING

- CLASSIFIER HAS A
"DESCRIPTION LENGTH"
- SMALLER LENGTH \Rightarrow SMALLER GAP
- PREFER "SIMPLER CLASSIFIERS"

THIRD ATTEMPT




BAD NEWS

- MODERN DEEP NETS HAVE BILLIONS OF PARAMETERS
- STILL THEY HAVE SMALL GENERALIZATION GAP

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