



Computational Learning Theory

1.1 Binary Classification

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What a Dictionary Says

Definition (Binary Classification)

Binary Classification is dichotomization applied to a practical situation.



- Important in medical testing, quality control and information retrieval.
- Methods commonly used for binary classification:
[Support Vector Machines](#), [Neural Networks](#), . . .
- There are many metrics that can be used to measure the performance of a predictor.
- Often the two groups are not symmetric.

Cited from: https://en.wikipedia.org/wiki/Binary_classification

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Is there a Butterfly?



1



1



0



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Applying Machine Learning Paradigms

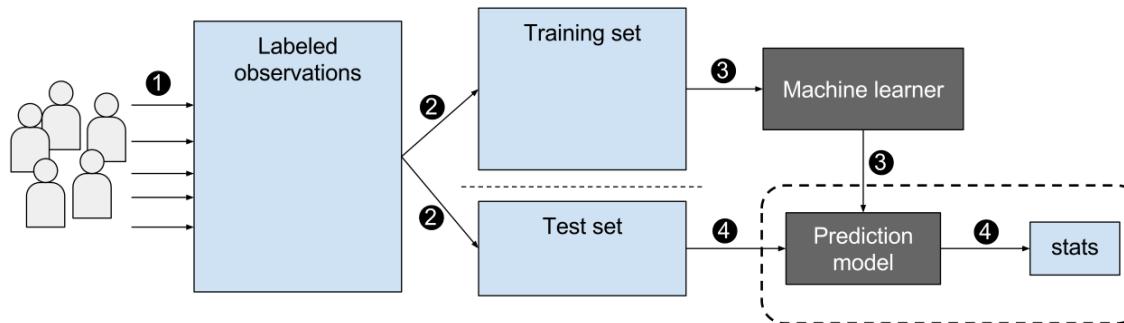


Image from: https://commons.wikimedia.org/wiki/File:Supervised_machine_learning_in_a_nutshell.svg

1. Training examples are **binary labeled (feature vectors of) pictures** binary labeled (feature vectors of) pictures.
2. The available data is split into **training data** training data (80%) and test data (20%).
3. **Machine learners** map **training sequences** to **prediction models** (Learning).
4. Evaluation on separate test data.

Combinatorial Analysis of Learning

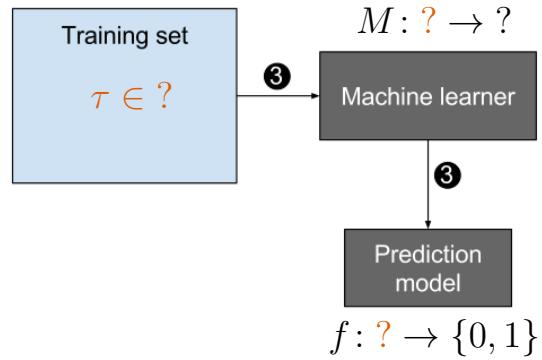


Image from: https://commons.wikimedia.org/wiki/File:Machine_learning_nutshell---Train_a_machine_learning_model.svg

Can a *machine learner M* learn a well performing *prediction model f* from an increasing amount of *training data τ*?

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