

Definition of Machine Learning

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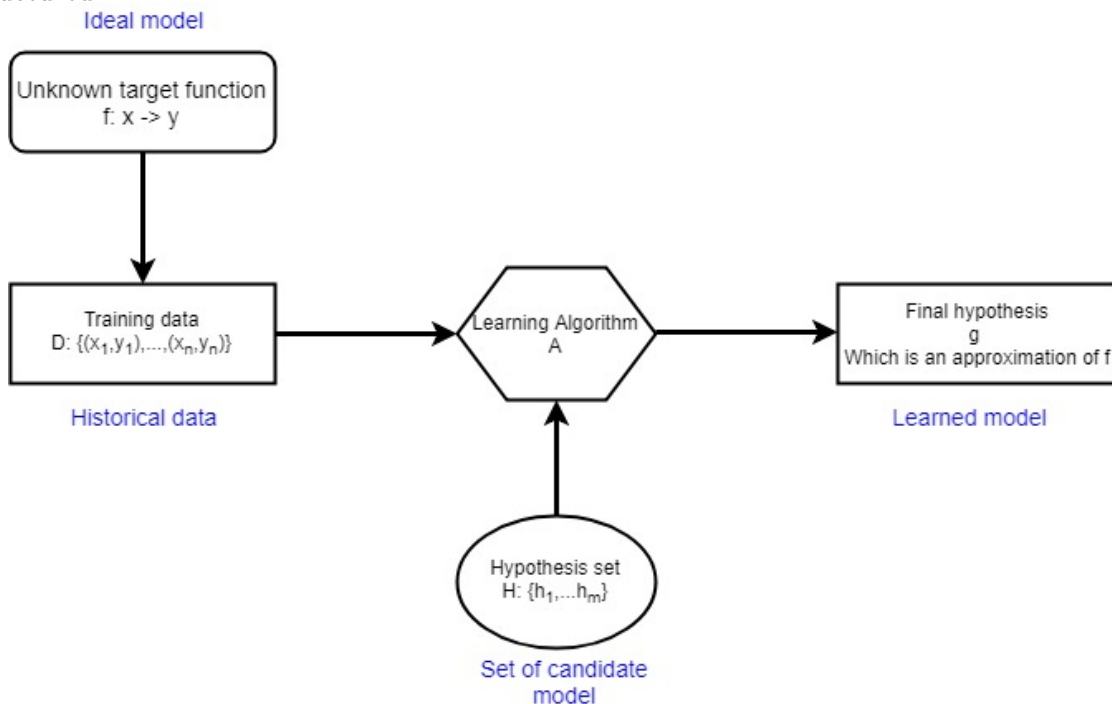
1 Definition of Machine Learning

Definition: Design a *Learning Algorithm* that uses *training data* to compute a *hypothesis* g that approximates *target function* f

To understand the definition, we need to define some notations.

1. Input: $x \in X$
2. Output: $y \in Y$
3. Target function: $f : X \rightarrow Y$
4. Hypothesis: $g : X \rightarrow Y$
5. Hypothesis set: H with $g_0, \dots, g_k \in H$
6. Training data: $\mathbb{D} = \{(x_1, y_1), \dots, (x_n, y_n)\}$
7. Learning algorithm: A

We are going to explain all these terms in one graph. The graph also shows how they are structured.



2 References

Almost all of the materials of this note are from Professor Hsuan-Tien Lin , NTU. If you want to know more information about Machine Learning Foundation, please refer to Professor Lin's homepage.