☆ Content

1. Linear Algebra
2. Calculus
3. Co-ordinate geometry
4. Optimization

Flow (How is this related to ML)

↓

Understanding the concept

↓

Vizualization

↓

Maths

↓

coding

ML Algo

② Regression

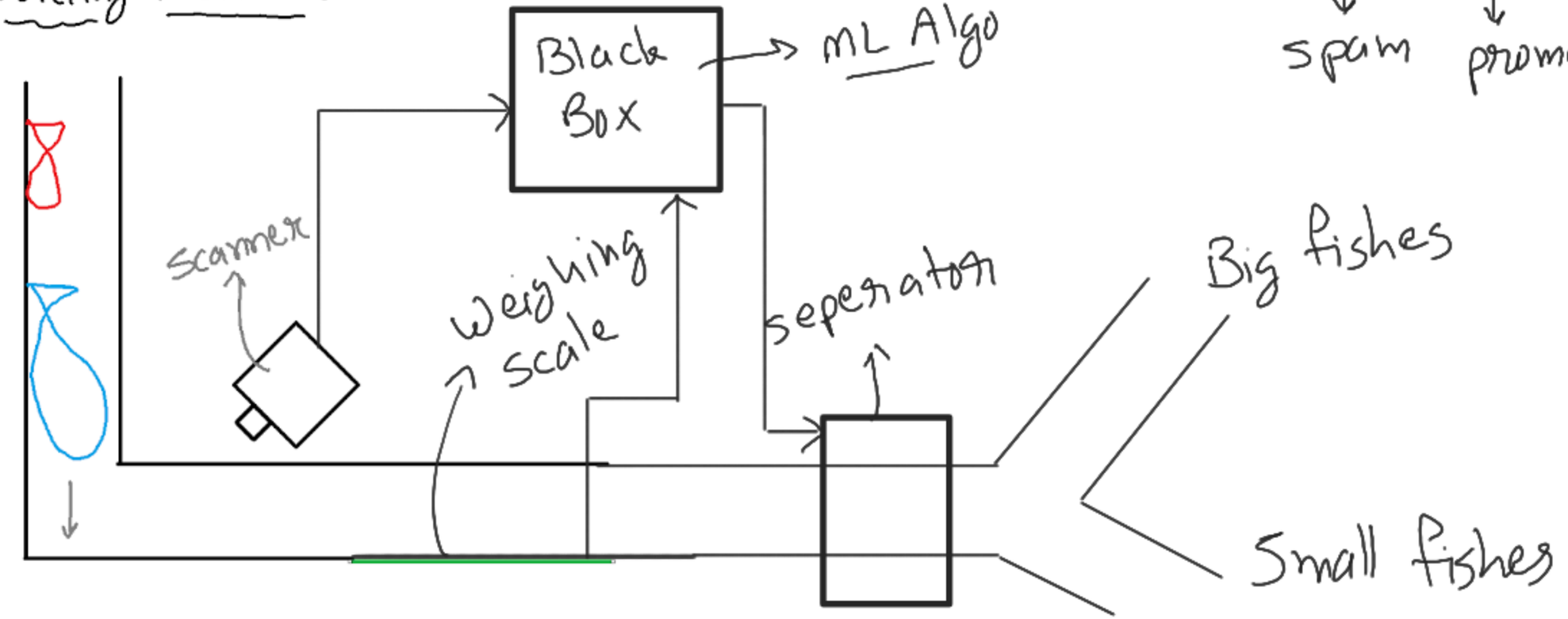
House Price prediction

① classification

email

spam promotion social other

☆ Sorting Problem:



Length	Width	Weight	Color	Type
5	3	20	Black	1
15	5	150	Red	2
20	10	200	Black	2

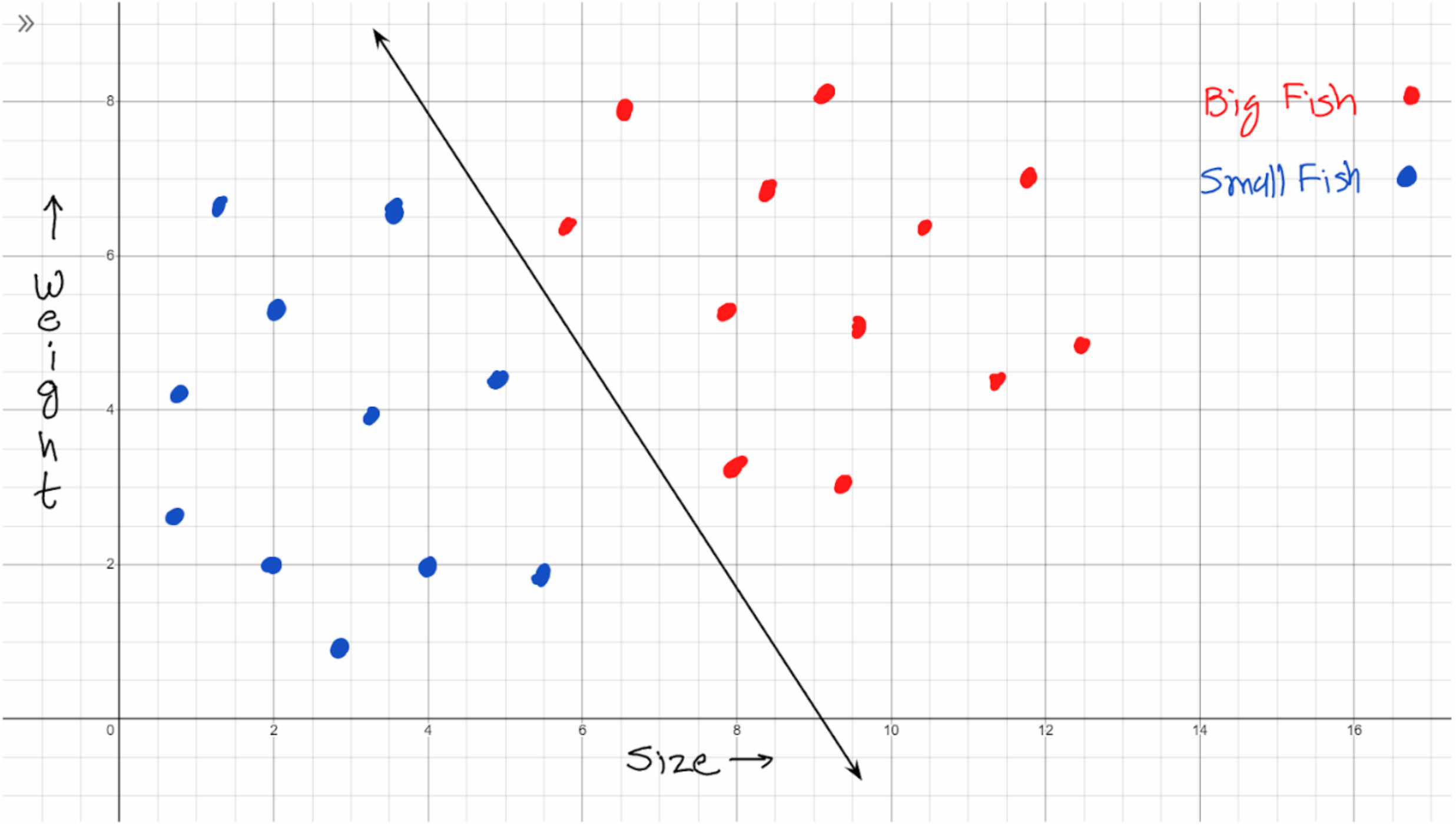
1 - small

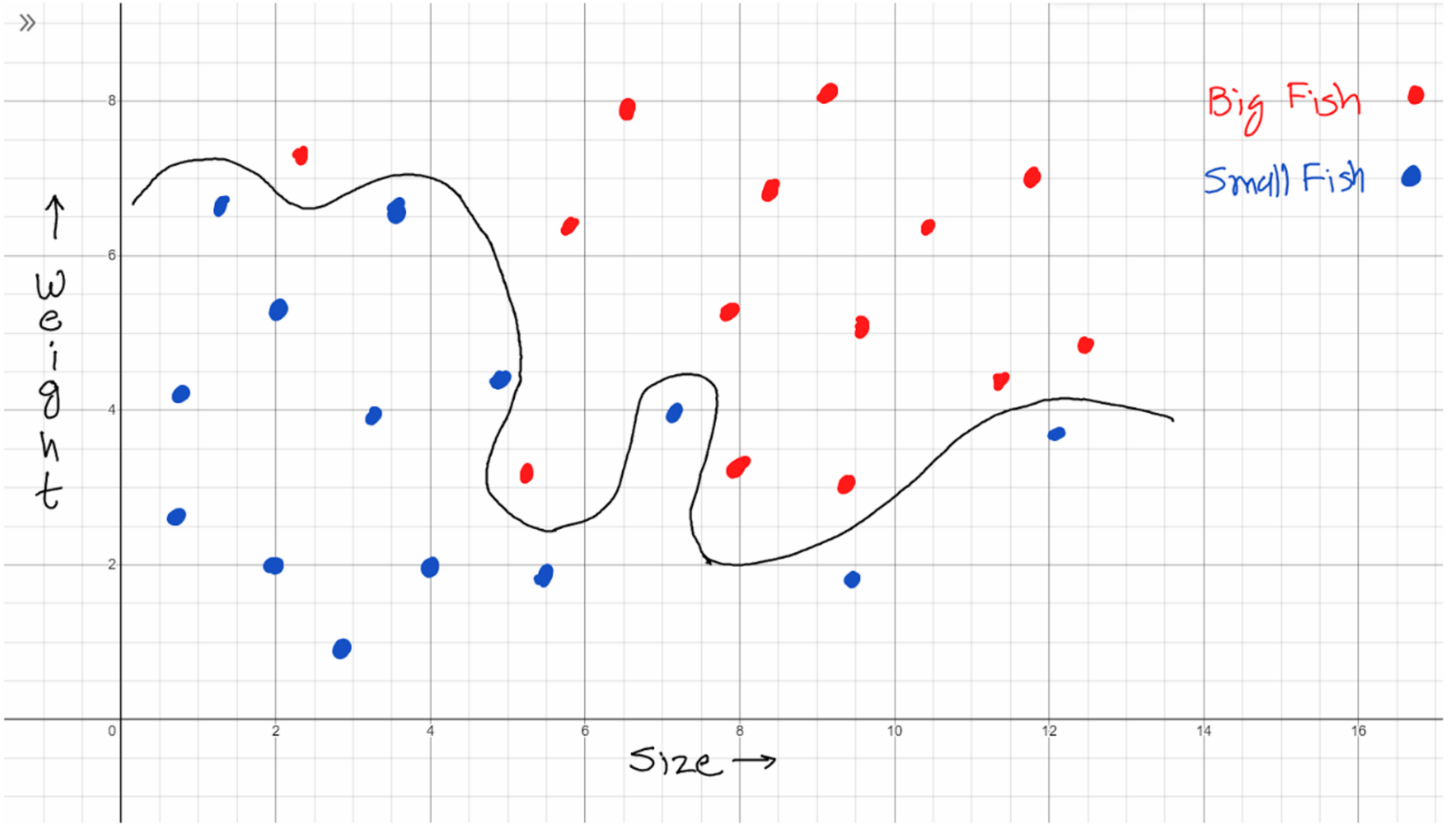
2 - Big

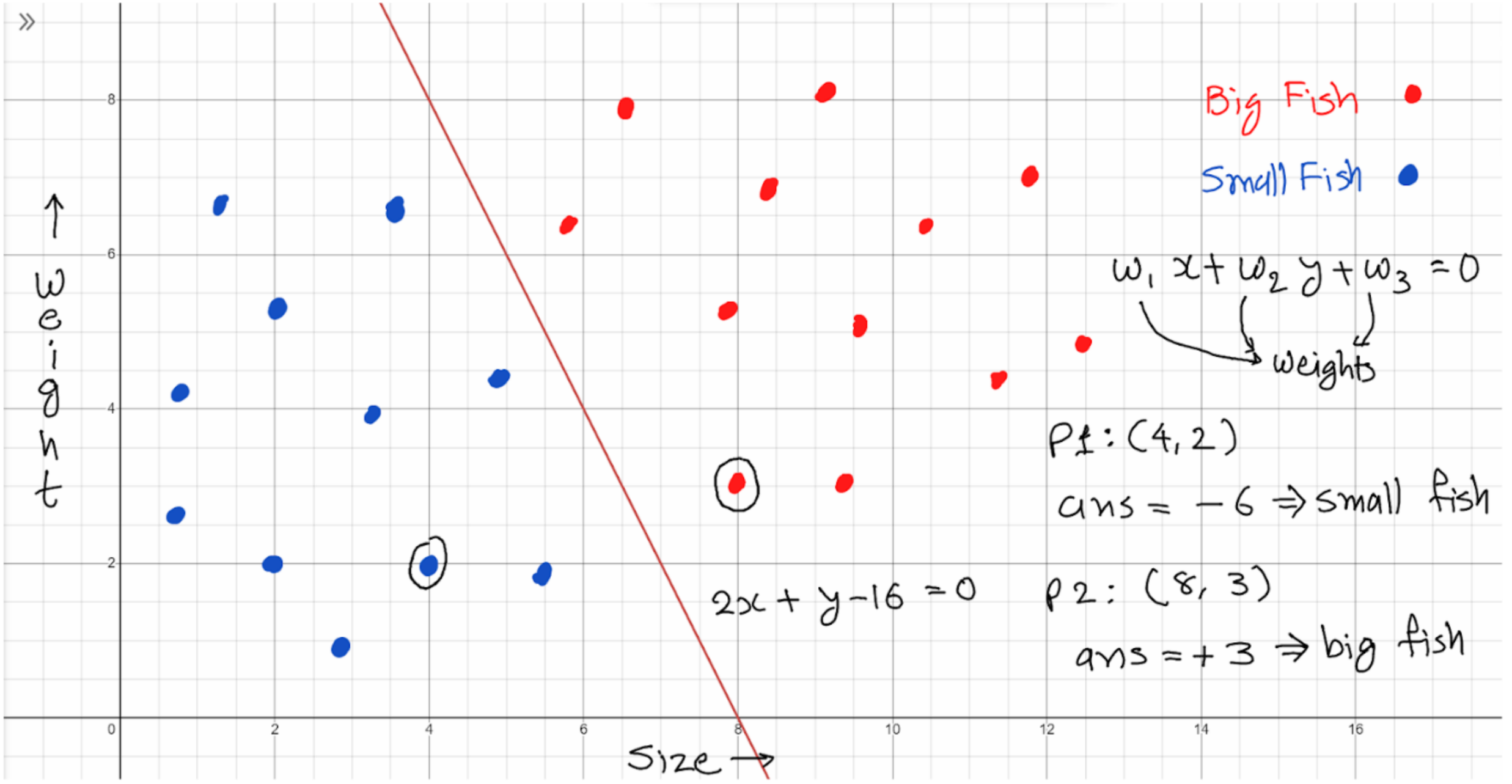
Features:-
(Independent variables)

→ Training Data

Our "Black-Box" (ML-Algo) must make predictions in alignment with training data.


Big Fish
Small Fish
Weight
Size
0
2
4
6
8
10
12
14
16


Big Fish
Small Fish
weight
Size
0
2
4
6
8
10
12
14
16
2
4
6
8


Big Fish
Small Fish
$w_1 x + w_2 y + w_3 = 0$
weights
P1 : (4, 2)
ans = −6 ⇒ small fish
P2 : (8, 3)
ans = +3 ⇒ big fish
$2x + y - 16 = 0$
weight
Size
0
2
4
6
8
10
12
14
16
2
4
6
8

☆ Half space : An $(n-1)$ dimensional structure that can act as boundary & seperates a n-dimensional space is a half space.

☆ Hyperplane

Linear Eq^n : $w_1 x + w_2 y + w_3 = 0 \longrightarrow$ plane in 2-D

Linear Eq^n in 3-D : $w_1 x + w_2 y + w_3 z + w_4 = 0$

Linear Eq^n in n-D space : $w_1 x_1 + w_2 x_2 + \ldots + w_n x_n + w_0 = 0$