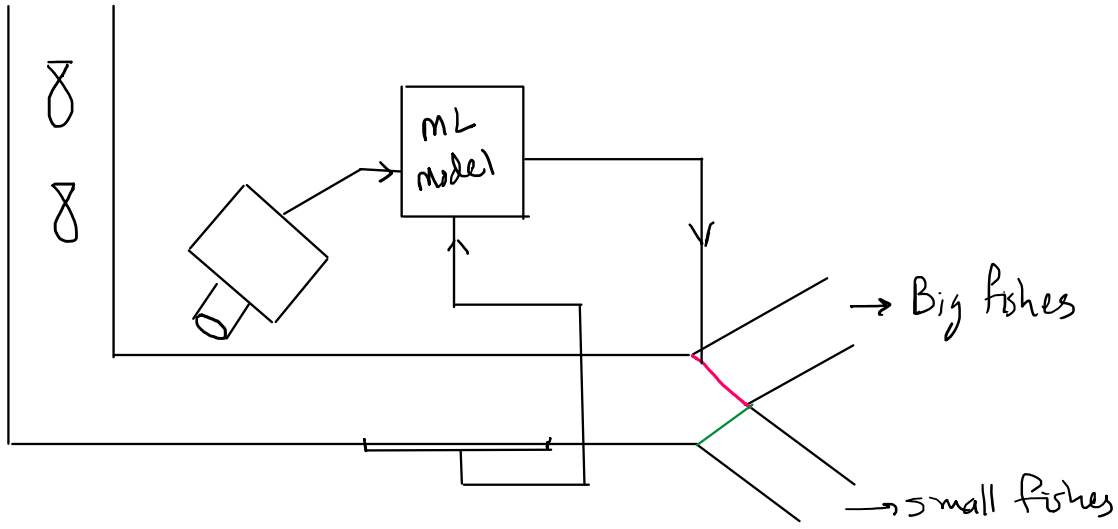
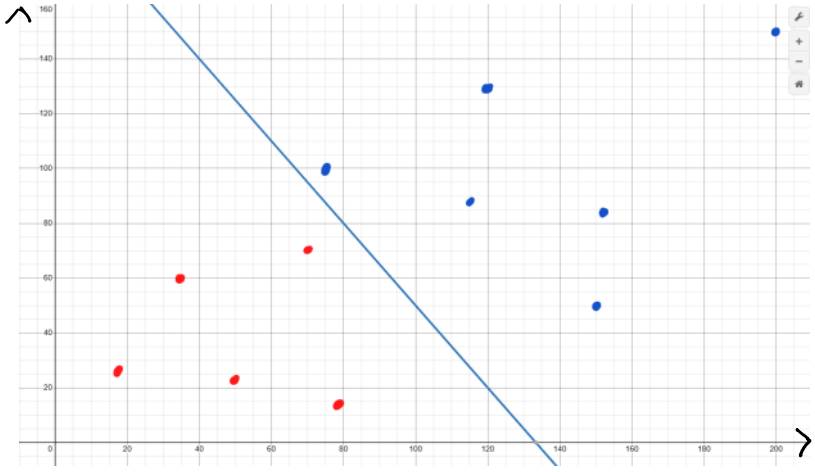


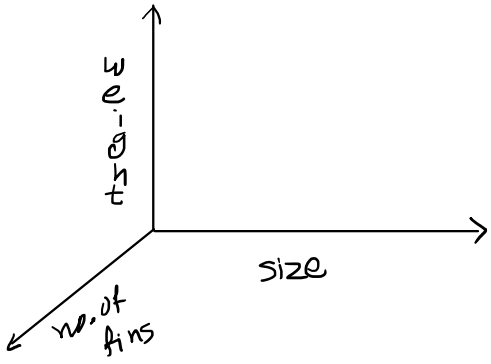
Features		Label
Size f_1	weight f_2	Type
50	23	small
150	50	Big
200	150	Big
75	100	Big
150	50	Big
70	70	small



Formula of straight line: $y = mx + c$

What if there are 3 features ?

size weight no. of fins



General form of straight line:

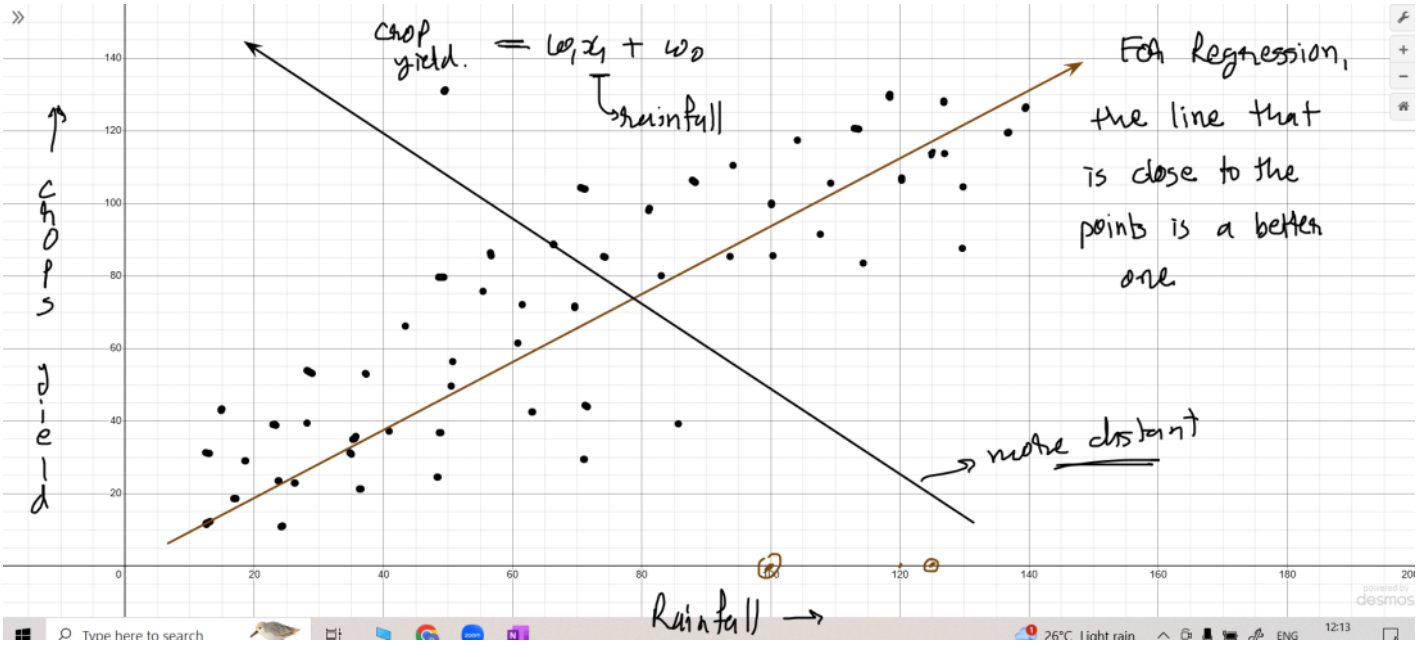
Features Space classifier

2 2D 1D line $ax + by + c = 0$ | $w_1x_1 + w_2x_2 + w_0 = 0$

3	3D	2D	plane	$ax + by + cz + d = 0$ | $w_1x_1 + w_2x_2 + w_3x_3 + w_0$
4	4D	3D		$ax + by + cz + dp + e = 0$
27	27D	26D		$w_1x_1 + w_2x_2 + w_3x_3 + w_4x_4 + w_0 = 0$
d	d-Dimensional	(d-1)-dim.		$w_1x_1 + w_2x_2 + \dots + w_{d-1}x_{d-1} + w_0 = 0$

ML is all about finding the right values of $w_0, w_1, w_2, \dots, w_n$

The line for which the total distances from all the points are higher is the better classifier.



Introduction to Loss / Gain Function:

Loss → Minimize

Gain → Maximize

$f(x) = x^2 + 7$

x :	-3	-2	-1	0	1	2	3
f(x) :	16	11	8	7	8	11	16