

1. 预测本频道观看人数

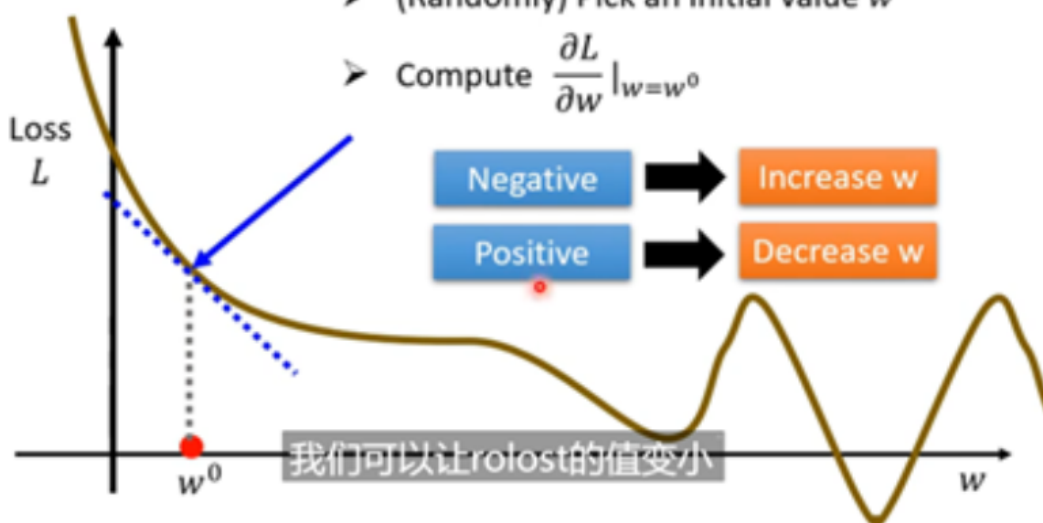
Source of image: <http://chico366.pixnet.net/album/photo/171572850>

3. Optimization

$$w^* = \arg \min_w L$$

Gradient Descent

- (Randomly) Pick an initial value w^0
- Compute $\frac{\partial L}{\partial w} \big|_{w=w^0}$



Machine Learning is so simple

$$y = b + wx_1$$

$$w^* = 0.97, b^* = 0.1k$$

$$L(w^*, b^*) = 0.48k$$



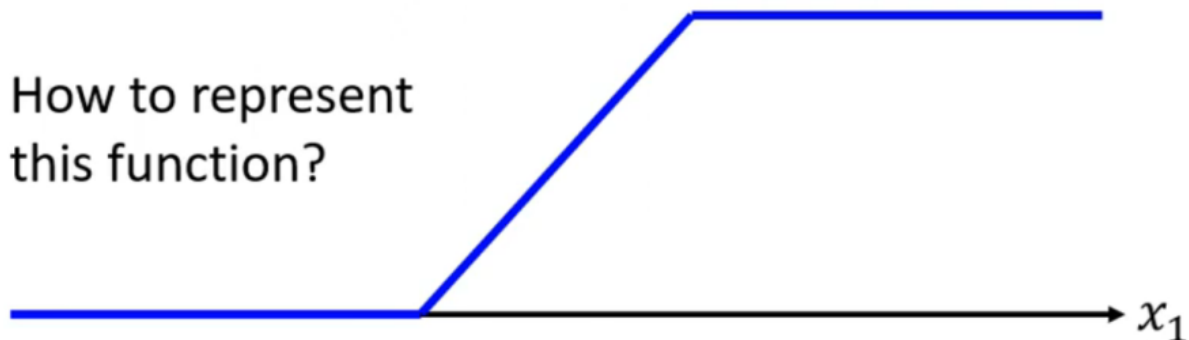
$y = 0.1k + 0.97x_1$ achieves the smallest loss $L = 0.48k$ on data of 2017 – 2020 (training data)

然后拿这个函式来进行预测

red curve = constant + sum of a set of



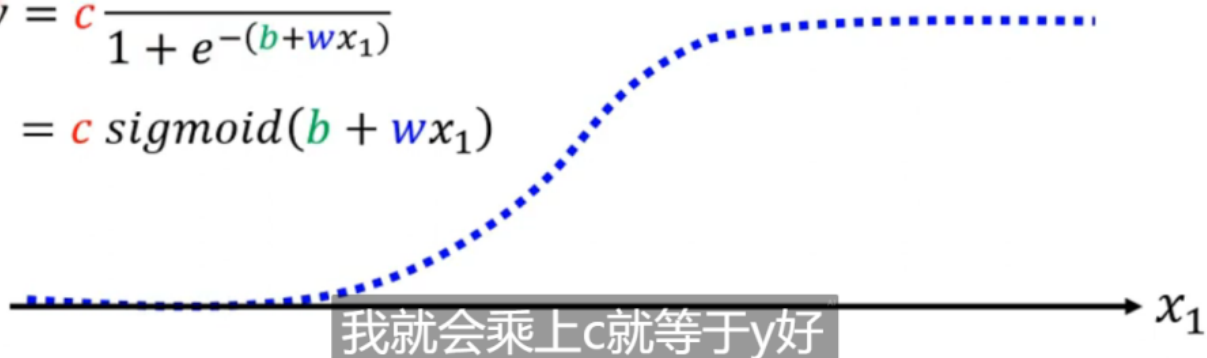
How to represent
this function?



Sigmoid Function

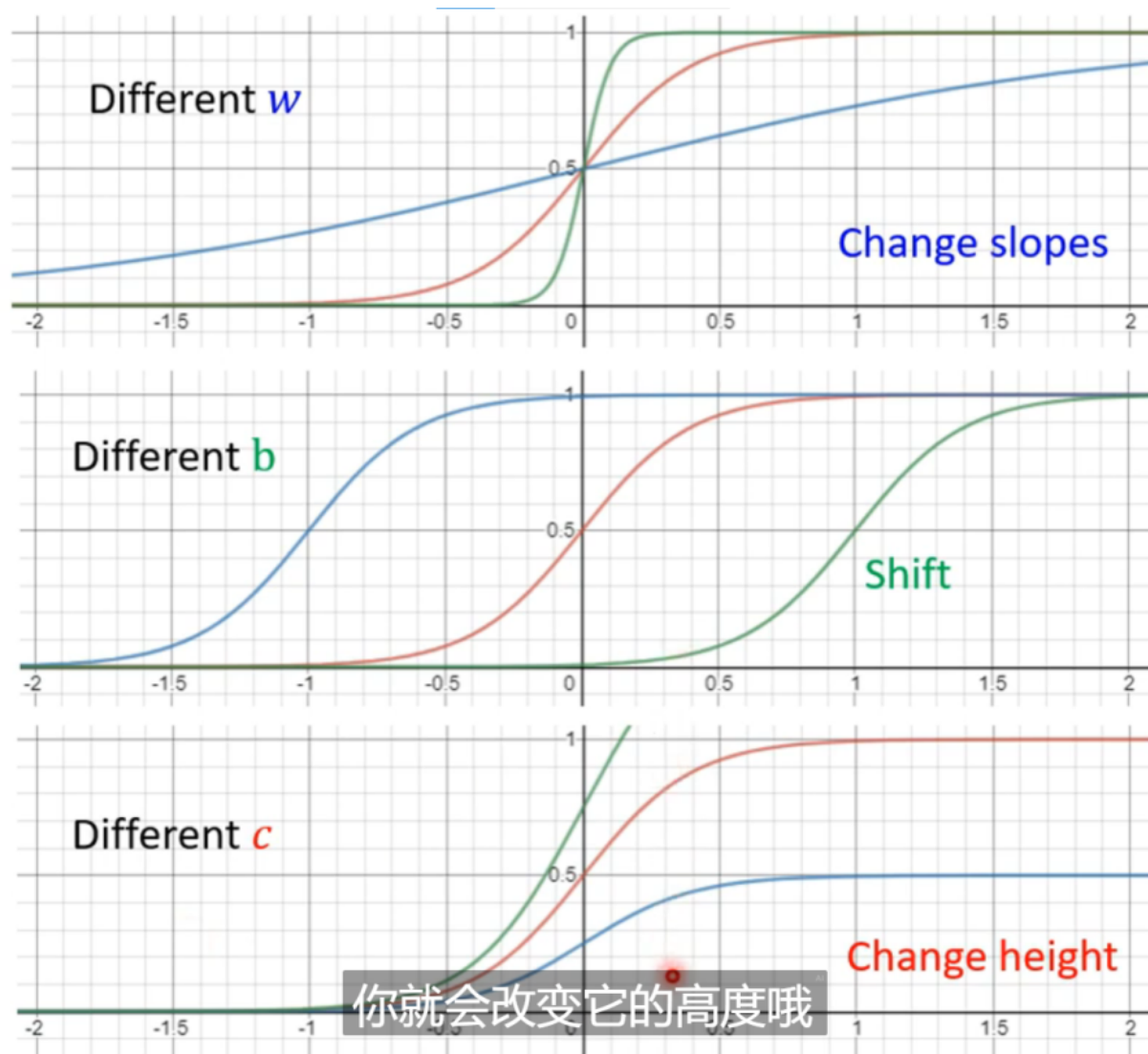
$$y = c \frac{1}{1 + e^{-(b+wx_1)}}$$

$$= c \operatorname{sigmoid}(b + wx_1)$$



我就会乘上c就等于y好

改变不同wbc结果:



$$y = \underline{b + wx_1}$$



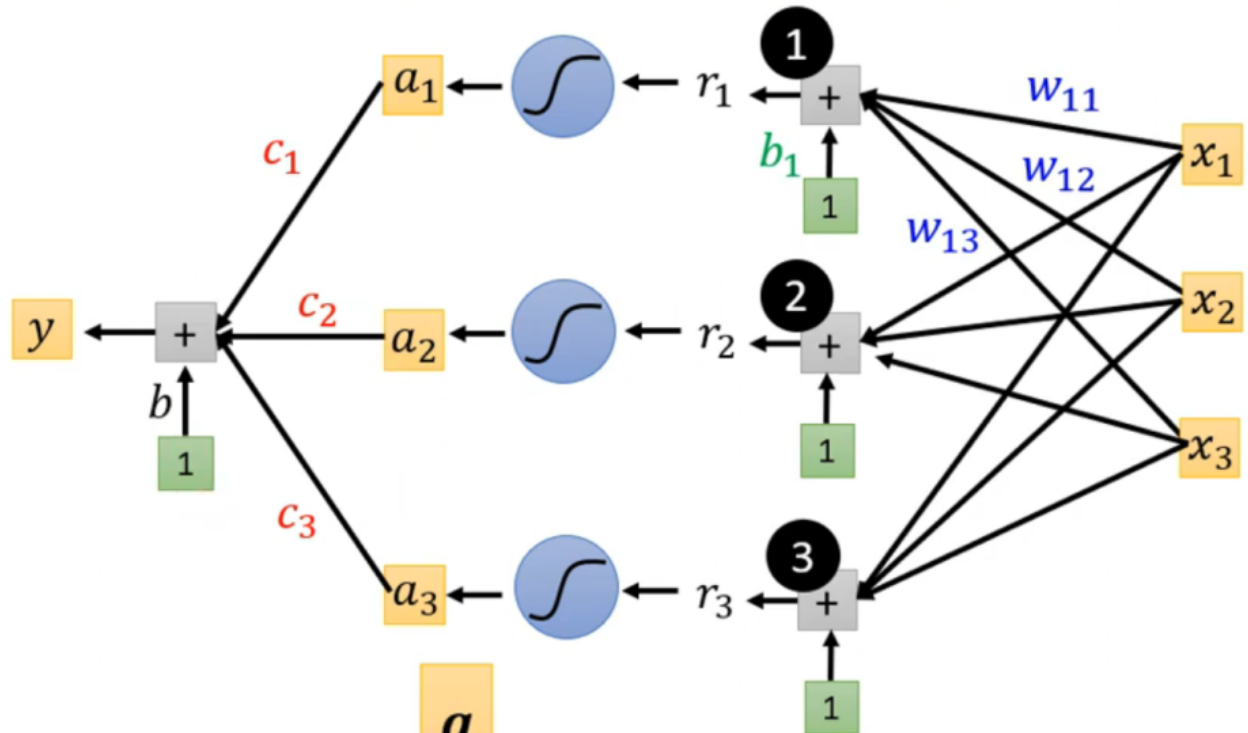
$$y = b + \sum_i c_i \text{sigmoid}(\underline{b_i + w_i x_1})$$

这边的y是一个值吗

$$y = b + \sum_i c_i \operatorname{sigmoid} \left(b_i + \sum_j w_{ij} x_j \right)$$


$i: 1, 2, 3$

$j: 1, 2, 3$



a one a two a3 拼起来叫这个向量

Sigmoid \rightarrow ReLU

$$y = b + \sum_i c_i \text{sigmoid} \left(b_i + \sum_j w_{ij} x_j \right)$$


Activation function

$$y = b + \sum_{2i} c_i \max \left(0, b_i + \sum_j w_{ij} x_j \right)$$


2. 机器学习任务攻略

General Guide

