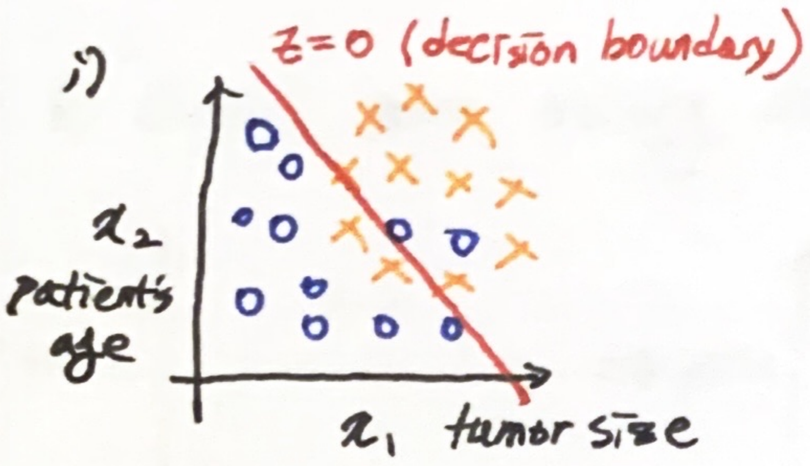
* Overfitting - Classification Problem

ex) Tumor is malignant or benign

i)



$z = w_1 x_1 + w_2 x_2 + b$

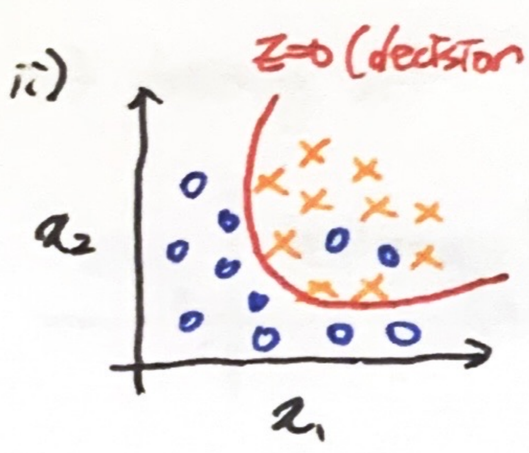
logistic regression model : $f_{\vec{w},b}(\vec{x}) = g(z)$

g is the sigmoid function

$\Rightarrow$ "Underfitting"

= "high bias"

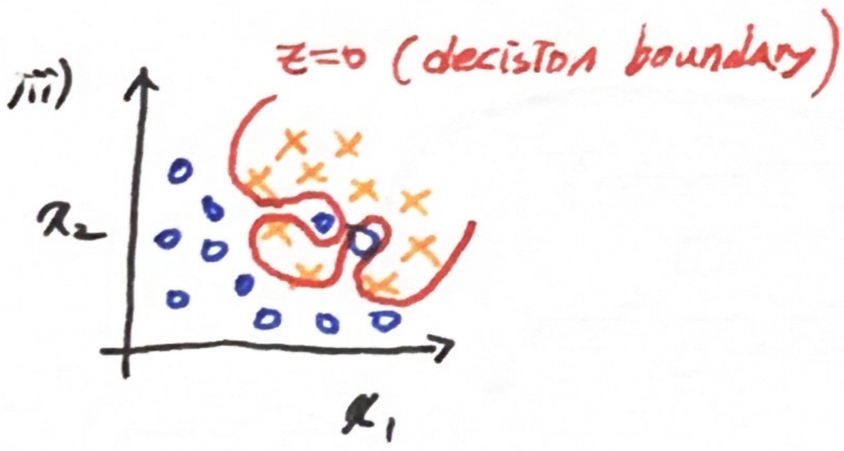
ii)



$z = w_1 x_1 + w_2 x_2 + w_3 x_1^2 + w_4 x_2^2 + w_5 x_1 x_2 + b$

$\Rightarrow$ "generalization"

iii)



$z = w_1 x_1 + w_2 x_2 + w_3 x_1^2 x_2 + w_4 x_1^2 x_2^2 + w_5 x_1^2 x_2^3 + w_6 x_1^3 x_2 + \cdots + b$

$\Rightarrow$ "Overfitting"

= "high variance"