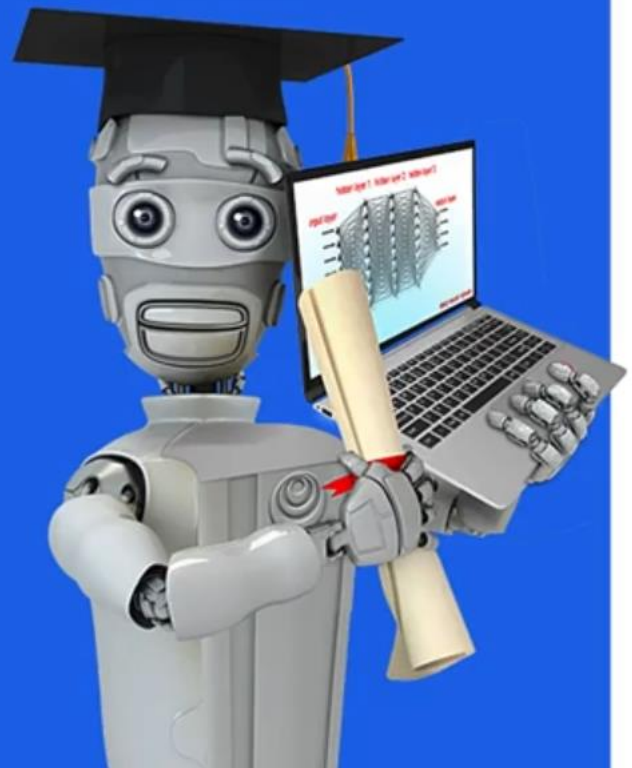
Stanford
ONLINE

DeepLearning.AI



Linear Regression with One Variable

Visualizing the Cost Function

Model $f_{w,b}(x) = wx + b$

~~before: b=0~~

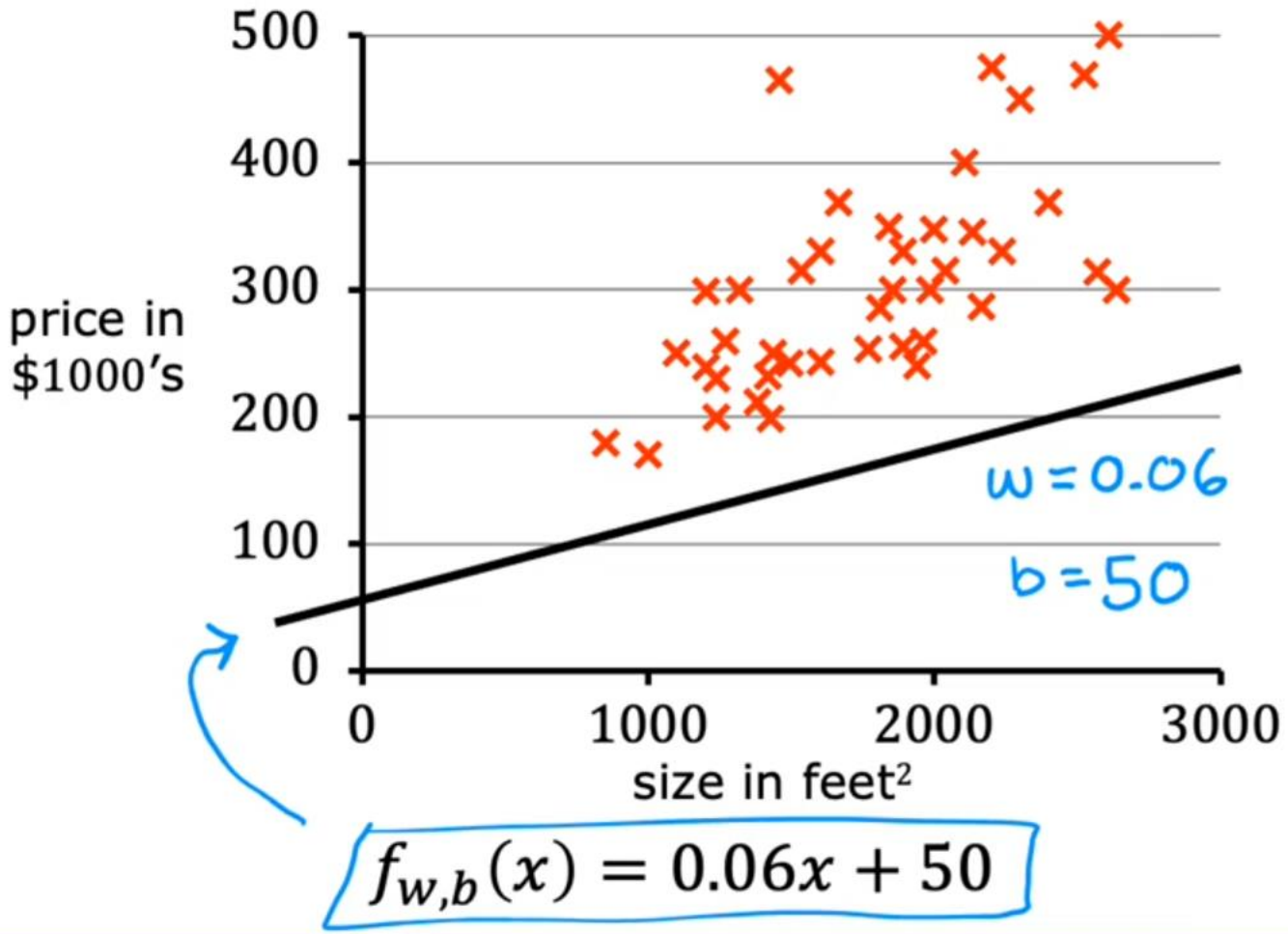
Parameters w, b

Cost Function $J(w,b) = \frac{1}{2m}\sum_{i=1}^{m}(f_{w,b}(x^{(i)}) - y^{(i)})^2$

Objective $\underset{w,b}{\text{minimize}}\, J(w,b)$

$f_{w,b}$

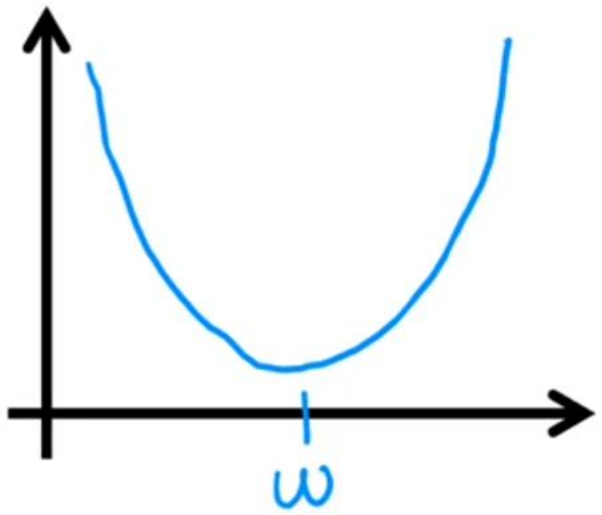
(function of x)



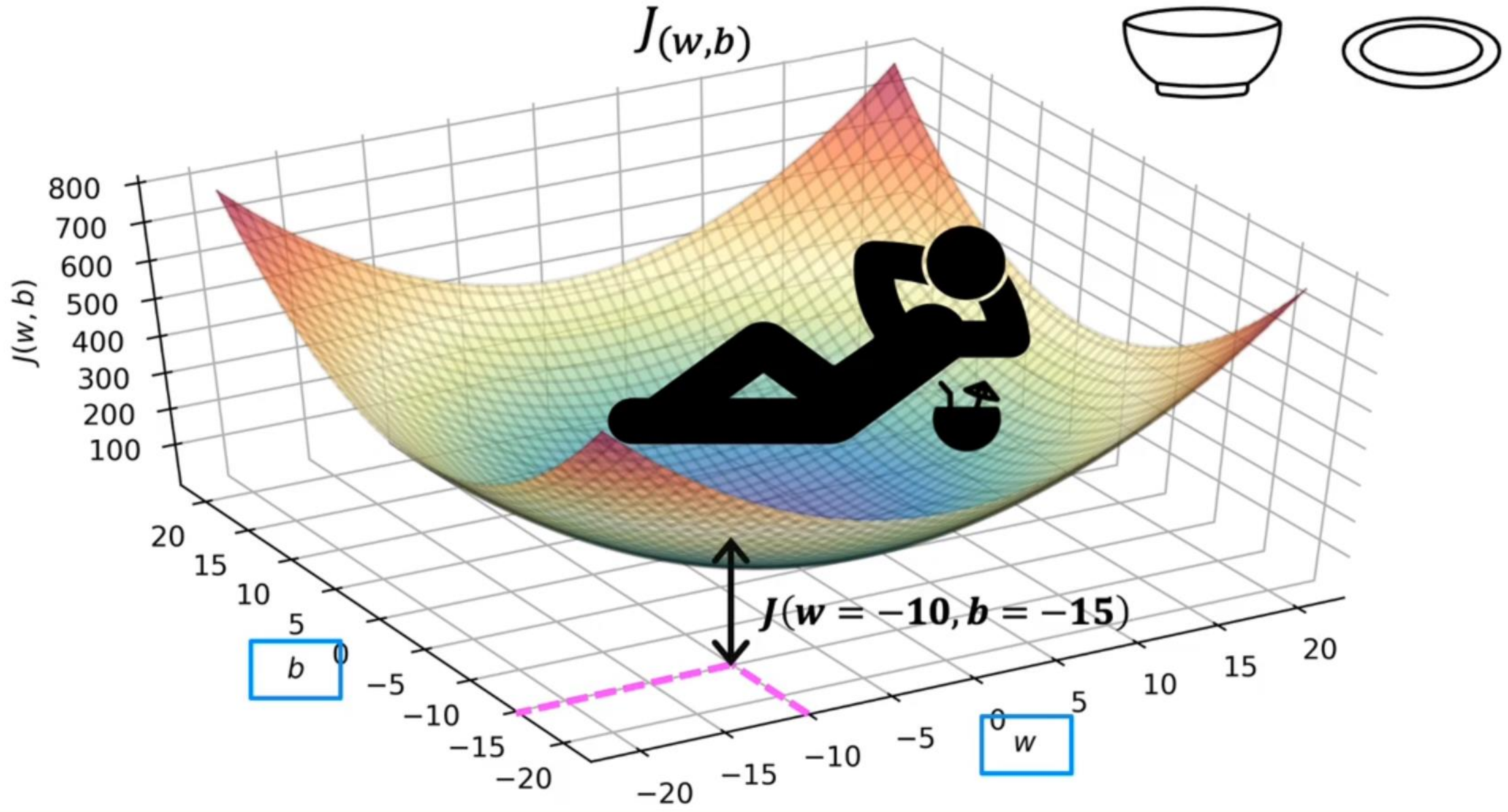
$f_{w,b}(x) = 0.06x + 50$

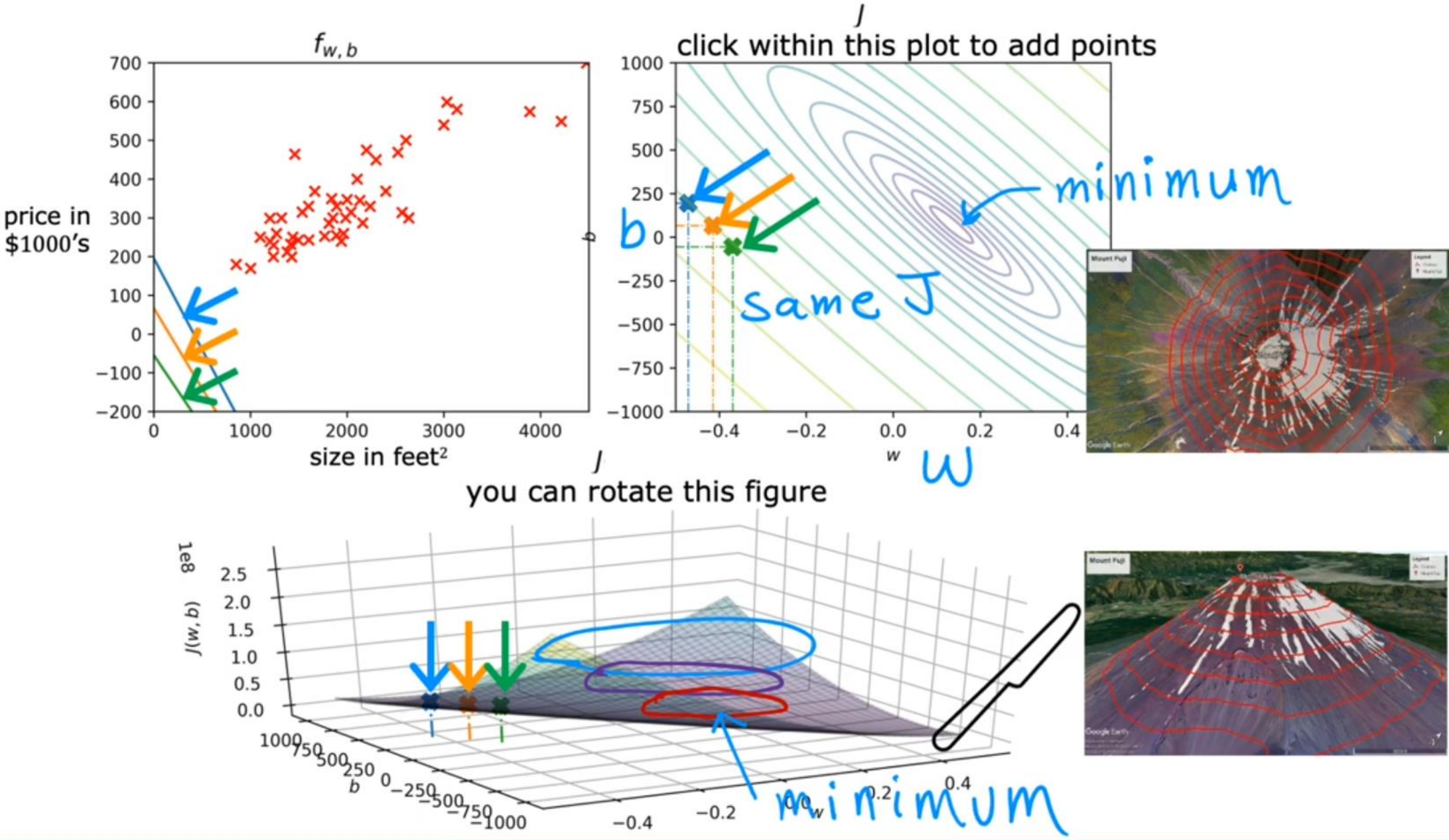
J

(function of w, b)



w , b


$J_{(w,b)}$
800
700
600
500
400
300
200
100
$J(w,b)$
20
15
10
5
0
−5
−10
−15
−20
b
−20
−15
−10
−5
0
5
10
15
20
w
$J(w=-10, b=-15)$


$f_{w,b}$
price in $1000's
size in feet²
J
click within this plot to add points
b
w
minimum
same J
you can rotate this figure
J(w, b)
1e8
minimum