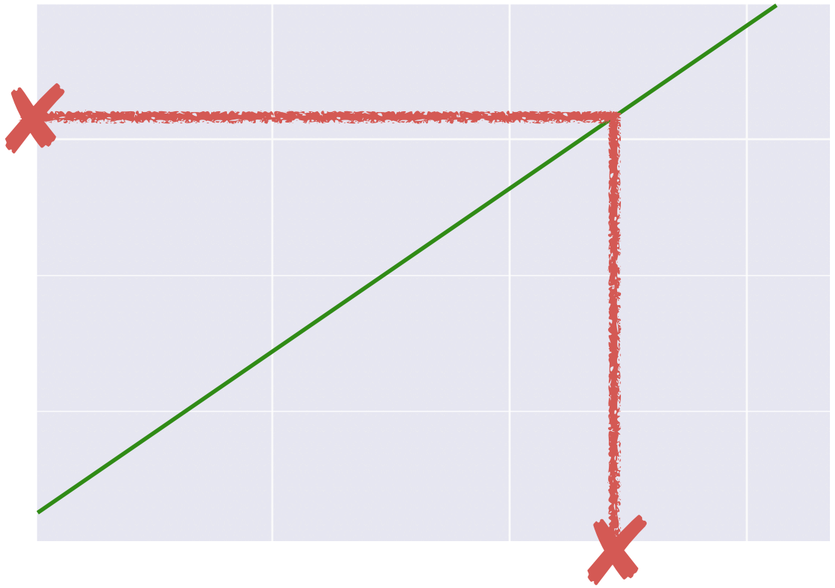
Predicting Discrete Outcomes

Paolo Perrotta
FREELANCE DEVELOPER
@nusco

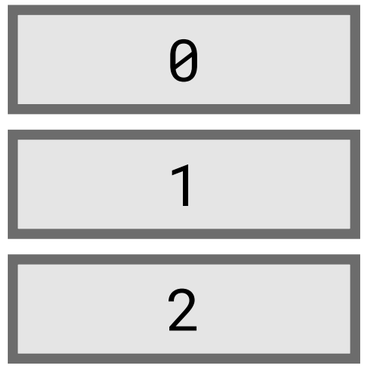
A Marsupial Classifier

Regression vs. Classification



Regression

Predicts a number



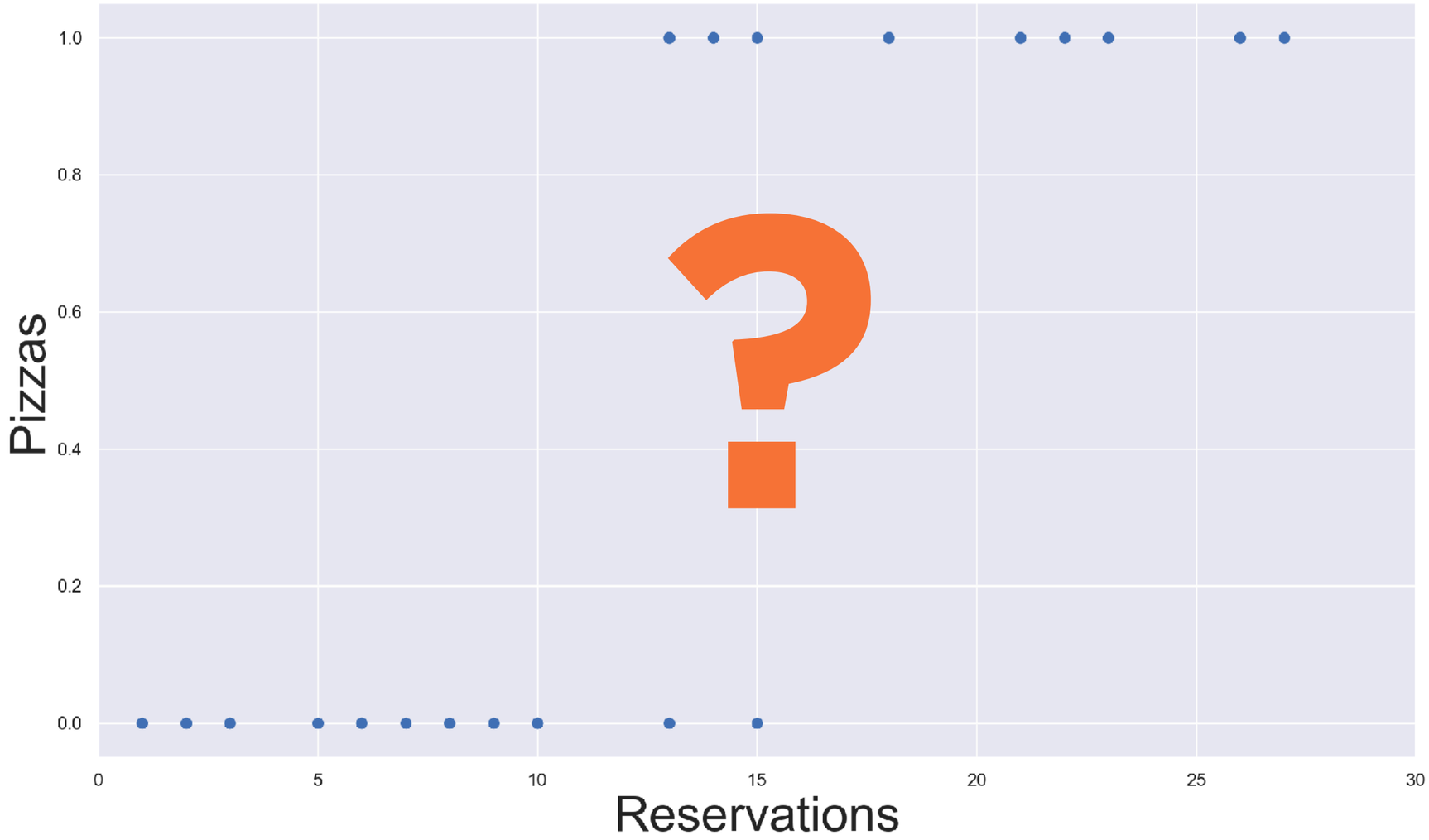
Classification

Predicts a class

pizza_categorical.txt

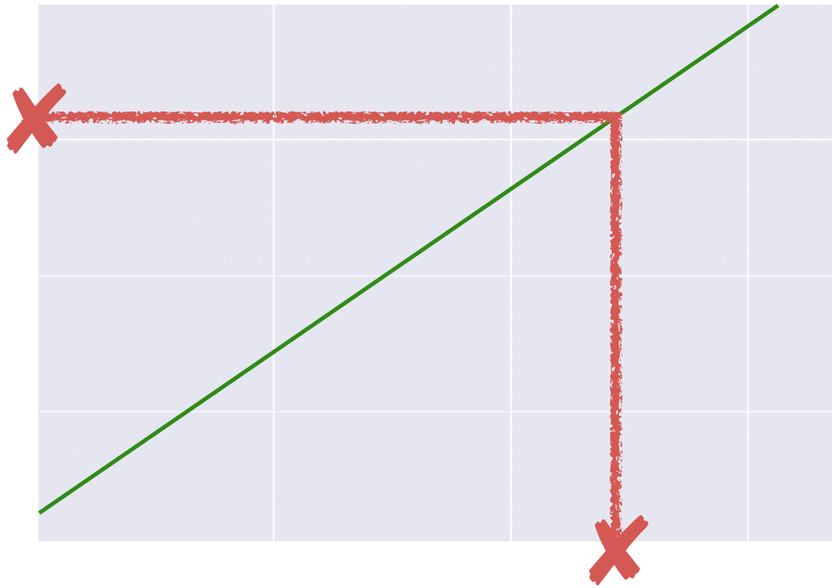
Reservations	Temperature	Tourists	Break-even
13	33	9	1
2	16	6	0
14	32	3	1
23	25	9	1
13	23	8	0
13	51	9	1
1	27	7	0
18	16	2	1
7	34	3	0
10	22	3	0
26	17	7	1
3	21	1	0
3	12	4	0

Categorical Data



From Regression to Classification

Adding Another Function

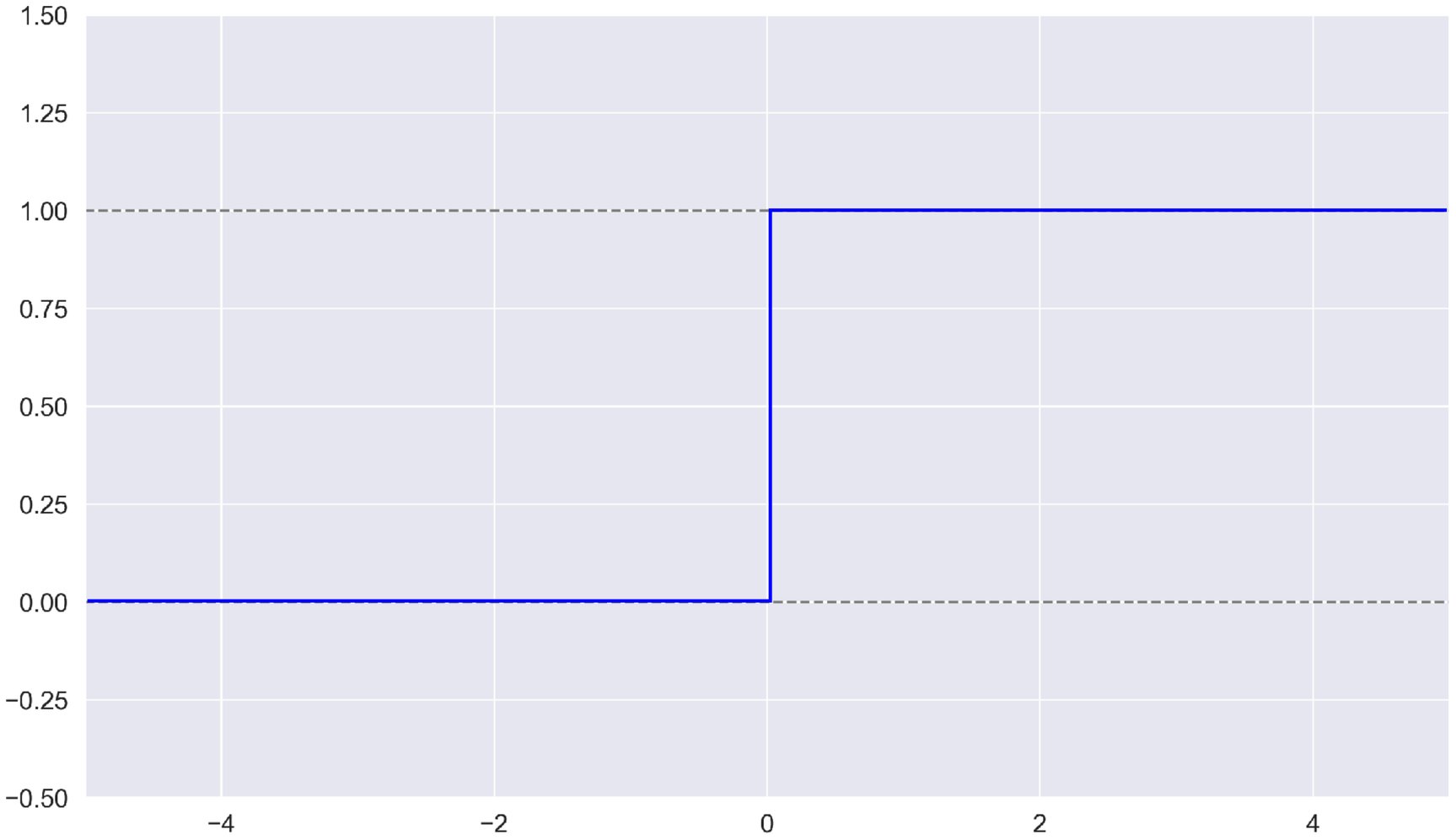


Any number

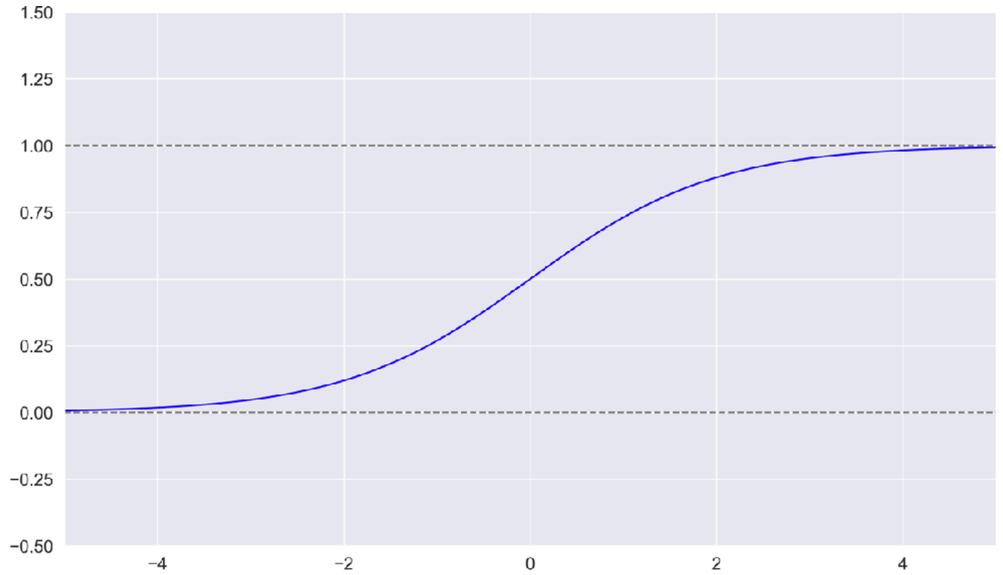
`function()`

0 to 1

Adding Another Function

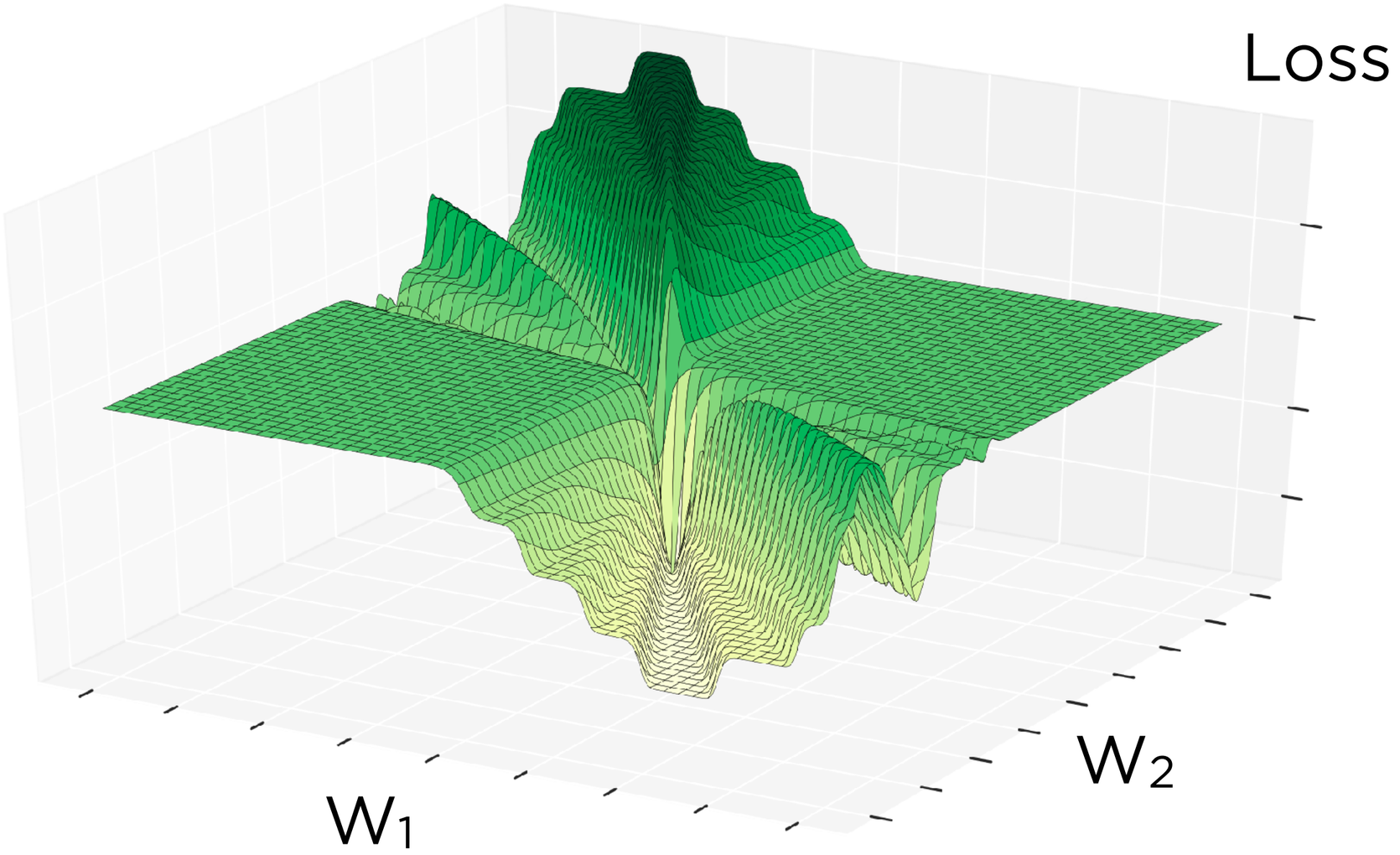


The Sigmoid

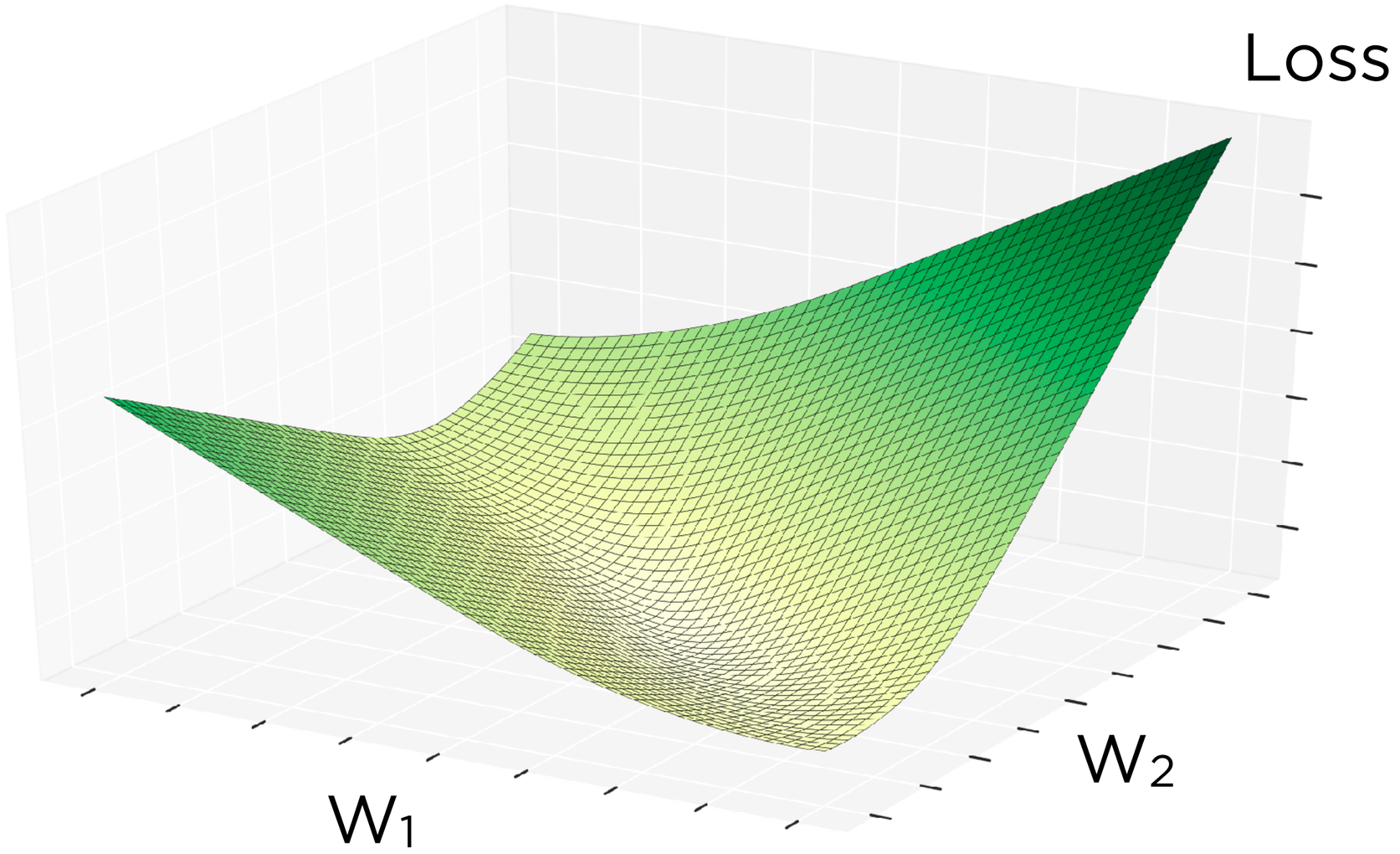


$$\frac{1}{1 + e^{-z}}$$

The Mean Squared Error Loss



The Log Loss



Summary

We shifted from regression to classification

- We wrapped a sigmoid around the output of regression
- We replaced the mean squared error with the log loss