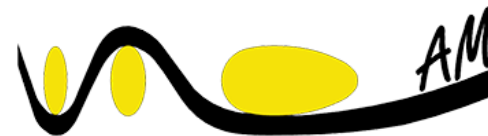


LECTURE 4. LOGISTIC CLASSIFIER

MANU 465

Ahmad Mohammadpanah

Ph.D., P.Eng.



AIntelligentManufacturing.com

Logistic Classifier

Consider a situation in which the response variable takes on only two possible values, “Yes-No” or “Failure-Success”, or “Obese-not obese”, Symbolically, “1 & 0”.

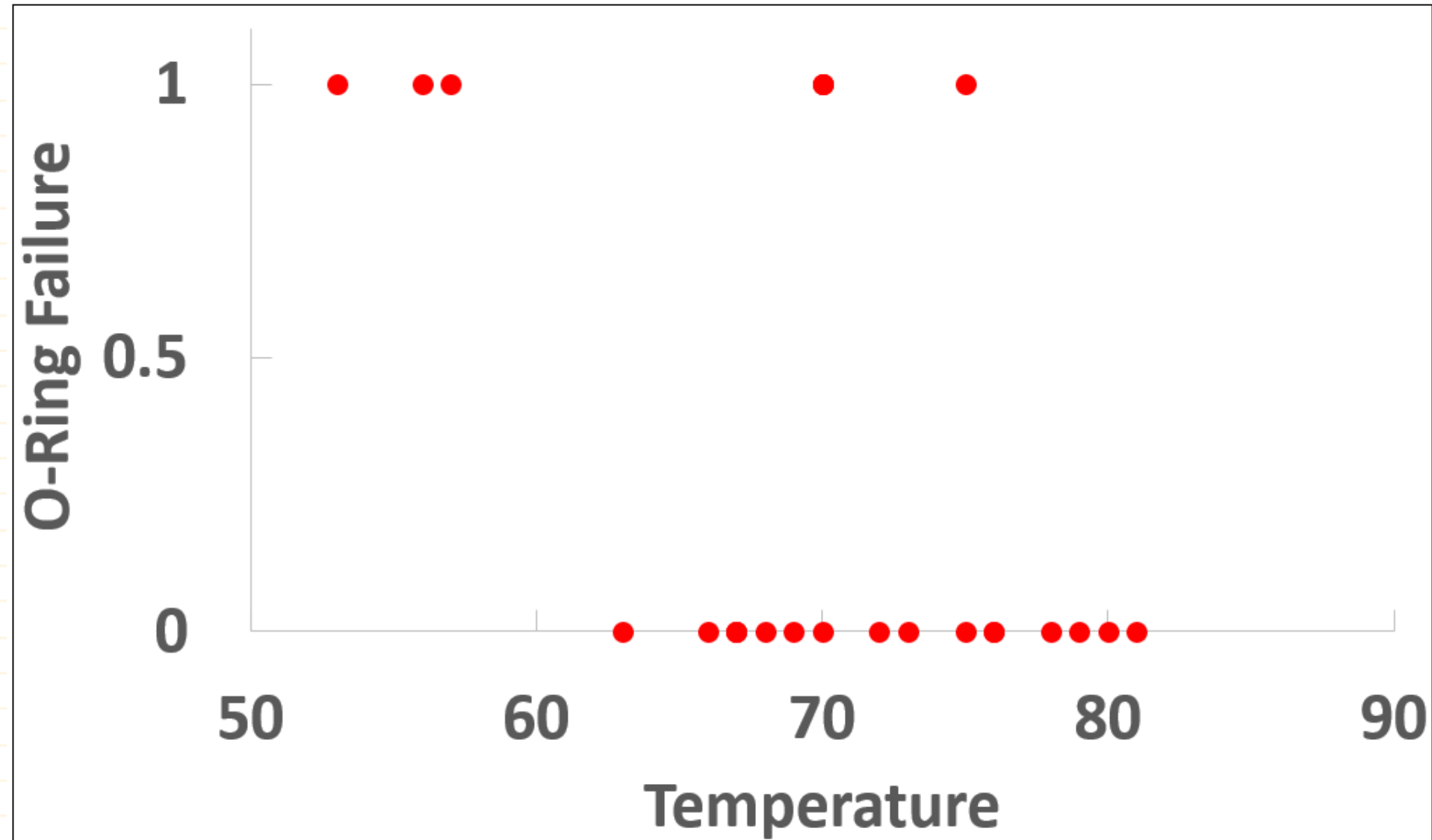
Example) The space shuttle Challenger disaster (1986) was the result of the failure of O-rings used to seal filed joints in the solid rocket motor because of the extremely low ambient temperatures at the time of lunch.

Read more: https://en.wikipedia.org/wiki/Space_Shuttle_Challenger_disaster

Prior to the lunch, there were data on the occurrence of O-ring failure and the corresponding temperature on 24 prior lunches of the motor.

Temperature	O-Ring failure	Temperature	O-Ring failure	Temperature	O-Ring failure
53	1	68	0	75	0
56	1	69	0	75	1
57	1	70	0	76	0
63	0	70	1	76	0
66	0	70	1	78	0
67	0	70	1	79	0
67	0	72	0	80	0
67	0	73	0	81	0

Let's plot the data



Generally, when the response variable is binary, there is considerable empirical evidence indicating that the shape of the response function should be a monotonically increasing/decreasing S-shaped (or reverse S-shaped) function, this function is called the "Logit Response Function"

Implement in Python

```
from sklearn.linear_model import LogisticRegression
```

```
Model = LogisticRegression()
```

```
Model.fit(X, y)
```

```
# Predicting for a New X:
```

```
LogitReg.predict_proba([[New_X]])
```