Power Transformer

Box-Cox Transformer || Yeo Johnson Transform

(SK learn)

Mathematical Transformation

- Function Transformer
  - log
  - Sq
  - Sqrt
- Power Transformer
  - Box-Cox
  - Yeo Johnson
- Quantile Transformer

Box Cox Transform

↳ given data transformed into Normal distribution

$$x_i^{(\lambda)} = \begin{cases} \dfrac{x_i^{\lambda} - 1}{\lambda} & \text{if } \lambda \neq 0 \\ \ln(x_i) & \text{if } \lambda = 0 \end{cases}$$

The exponent here is a variable called lambda (λ) that varies over the range of -5 to 3, and in the process of Searching, we examine all values of λ. finally, we choose the optimal value (resulting in the best approximation to a normal distribution) for your variable.

* It is Strictly applicable to number that is greater than zero, $x > 0$

Yeo - Johnson Transform

$$y_i^{(\lambda)} = \begin{cases} [(y_i+1)^{\lambda} - 1]/\lambda & \text{if } \lambda \neq 0,\ y_i \geq 0 \\ \ln(y_i) + 1 & \text{if } \lambda = 0,\ y_i \geq 0 \\ -[(-y_i+1)^{2-\lambda} - 1]/(2-\lambda) & \text{if } \lambda \neq 2,\ y_i < 0 \\ -\ln(-y_i+1) & \text{if } \lambda = 2,\ y_i < 0 \end{cases}$$

This transformation is somewhat of an adjustment to the Box - Cox transformation, by which we can apply it to negative numbers.

Power Transformation class in Sklearn