1 Logistic

A logistic function or logistic curve is a common 'S' shaped curve with equation:

$$f(x) = \frac{L}{1 + e^{-k(x-x_0)}} \tag{1}$$

where

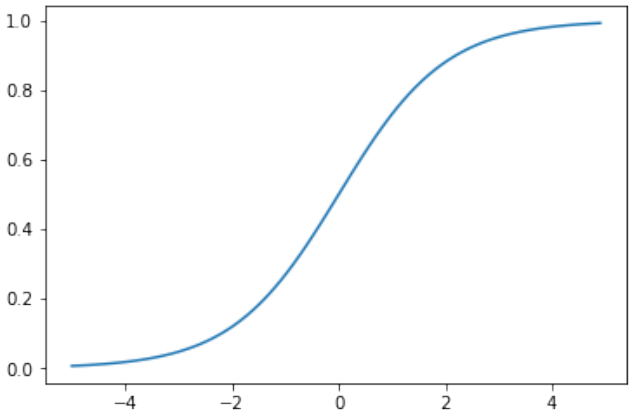
- e = natural log
- x_0 = x-value of sigmoid's midpoint
- L = the curve's maximum value
- k = the steepness of the curve

1.1 Standard Logistic

The standard logistic function is the logistic function with parameters given $(k = 1, x_0 = 0, L = 1)$ i.e.

$$\sigma(x) = \frac{1}{1 + e^{-x}} \tag{2}$$

which when plotted looks like



Why is logistic function so important? Because it can take any real input $x, (x \in R)$, whereas the output always takes values between 0 and 1, and hence is interpretable as probability.