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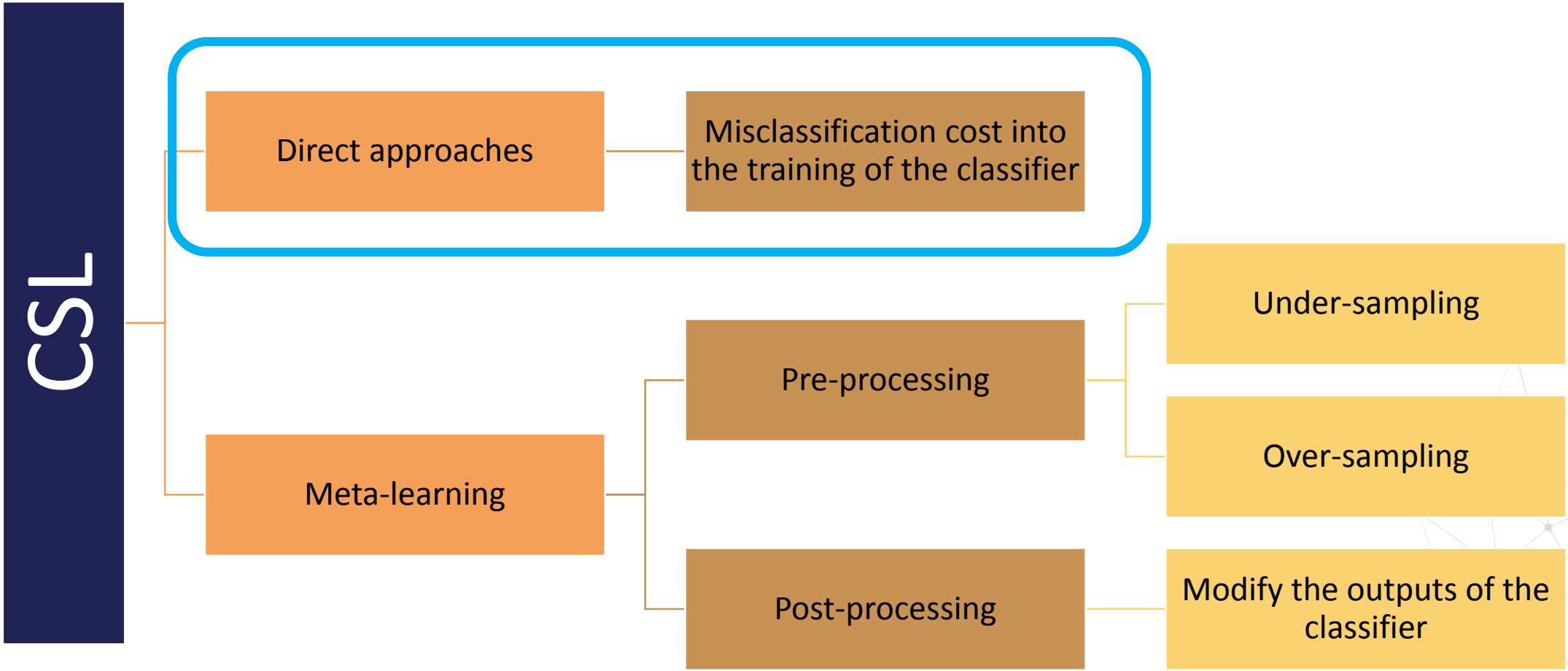
# Introducing Cost in Logistic Regression

# Cost Sensitive Approaches



# Logistic Regression – Cost Function

$$h(x) = \frac{1}{1+ e^{\beta T x}}$$

$$J(\beta) = \frac{1}{m} \sum_{n=1}^{m} \frac{1}{2} (h(x) - y)^2$$

$$J(\beta) = \text{Cost}(h(x), y) = \begin{cases} -\log (h(x)) & \text{if } y=1 \\ -\log (1- h(x)) & \text{if } y=0 \end{cases}$$

$$J(\beta) = \text{Cost}(h(x), y) = -y \log(h(x)) - (1-y) \log (1- h(x))$$

# Weighted Logistic Regression

$$h(x) = \frac{1}{1+ e^{\beta T x}}$$

$$J(\beta) = \frac{1}{m} \sum_{n=1}^{m} \frac{1}{2} (h(x) - y)^2$$

$$J(\beta) = \text{Cost}(h(x), y) = \begin{cases} -\log(h(x)) & \text{if } y=1 \\ -\log(1- h(x)) & \text{if } y=0 \end{cases}$$

$$J(\beta) = \text{Cost}(h(x), y) = - \mathbf{w1}\, y \log(h(x)) - \mathbf{w0}\, (1-y) \log(1- h(x))$$

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# THANK YOU

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