

$$\frac{\partial F}{\partial \beta_m} = \sum_{n=1}^N \beta_n K(x_n, x_m) + 2C \sum_{n=1}^N [ |y_n - s_n| \geq \varepsilon ] \left( \text{sign}(y_n - s_n) (y_n - s_n) - \varepsilon \right) \frac{\partial \left( \text{sign}(y_n - s_n) (y_n - s_n) - \varepsilon \right)}{\partial \beta_m}$$