

Let $\mathcal{L} = (x_1, \dots, x_n)$ – training data with labels (y_1, y_n) and \mathcal{U} – set of examples models doesn't know labels for. Let f – function, interpolating training dataset, with minimum norm (this condition is gotten from the experiments – such models usually have good interpolating properties. Let's define $f_t^u(x)$ – as minimum-norm function that interpolates training data combined with the point $u \in \mathcal{U}$ with label t . The label $t(u)$ we will choose by one of these ways:

$$t^{(1)}(u) = \operatorname{argmin}_{t \in \{-1, 1\}} \|f_t^u(x)\|, \quad t^{(2)}(u) = \begin{cases} +1 & \text{if } f(u) \geq 0, \\ -1 & \text{if } f(u) < 0 \end{cases} \quad (1)$$

Defined $t(u)$, let $f^u(x) = f_{t(u)}^u(x)$. Introduce also *score*-functions:

$$\operatorname{score}^{(1)}(u) = \|f^u(x)\|, \quad \operatorname{score}^{(2)}(u) = \|f^u(x) - f(x)\|, \quad (2)$$

In the first case the most *score* get the least smooth function, in the second case – the function, that differs the most from previous one. We expect that point with the largest *score* is the most informative. Then the next point for labeling is

$$u^* = \operatorname{argmax}_{u \in \mathcal{U}} \operatorname{score}(u).$$

In (1) и (2) we intentionally do not define specific norm for variety of *score*-functions. If these norms are the same and we chose the first *score*-function, then the new point u^* can be determined by

$$\|f^{u^*}(x)\| = \max_{u \in \mathcal{U}} \min_{t \in \{-1, 1\}} \|f_t^u(x)\|. \quad (3)$$