

1 RANKING SVM

Assume there N articles with news coverage in the dataset, which we denote d_1, d_2, \dots, d_N . We group all the articles in the dataset into N groups, r_1, \dots, r_N with each group having one article with news coverage, and the corresponding matched articles without news coverage. We denote the the matched articles in group i as $d_i^1, d_i^2, \dots, d_i^k$, where k is the number of matched articles in group i .

$$\text{minimize} \quad : V(\vec{w}, \vec{\xi}) = \frac{1}{2} \vec{w} \cdot \vec{w} + C \sum \xi_{i,j} \quad (1.1)$$

$$\text{subject to} : \forall d_1^j \in r_1 : \vec{w} \phi(d_1) \geq \vec{w} \phi(d_1^j) + 1 - \xi_{1,j} \quad (1.2)$$

$$\dots \quad (1.3)$$

$$\forall d_N^j \in r_N : \vec{w} \phi(d_N) \geq \vec{w} \phi(d_N^j) + 1 - \xi_{N,j} \quad (1.4)$$

$$\forall i \forall j : \xi_{i,j} \geq 0 \quad (1.5)$$