Rating Prediction with Multiple Logistic Regression Classifiers

Text Object: $X = (x_1, x_2, ..., x_M), \ x_i \in \Re$

Rating: $r \in \{1, 2, ..., k\}$

After training k-1 Logistic Regression Classifiers

$$p(r \geq j \mid X) = \frac{e^{\alpha_j + \sum_{i=1}^{M} x_i \beta_{ji}}}{e^{\alpha_j + \sum_{i=1}^{M} x_i \beta_{ji}} + 1}$$

j=k, k-1, ..., 2

| $p(r{\geq}k\mid X) > 0.5?$ | **Yes** → | **r=k** |

No ↓

| $p(r{\geq}k{-}1\mid X) > 0.5?$ | **Yes** → | **r=k-1** |

...

No ↓

| $p(r{\geq}2\mid X) > 0.5?$ | **Yes** → | **r=2** |

No ↓

r=1

5