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Correction to: Enhancing SVM for survival data using local invariances and weighting

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The original article can be found online at https://doi.org/10.1186/s12859-020-3481-2.

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Correction to: BMC Bioinformatics 21, 193 (2020)
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Following publication of the original article [1], the authors identified errors in the equations. The correct equations are given below.

Equation (7)

$$S^{z(ti)} = \frac{S^{(ti+z)}}{S^{(ti)}}$$

Equation (8)

$$\begin{aligned} \underset{\boldsymbol{w},\boldsymbol{w}^*,b,b^*}{\text{minimize}} \quad & \frac{1}{2}\left(\|\boldsymbol{w}\|^2 + \gamma\|\boldsymbol{w}^*\|^2\right) + C\sum_{i=1}^{n}\xi_i \\ \text{subject to} \quad & \xi_i = \left(\langle \boldsymbol{w}^*, \boldsymbol{x}_i^*\rangle + b^*\right), && i = 1,\ldots,n \\ & y_i\left(\langle \boldsymbol{w}, \boldsymbol{x}_i\rangle + b\right) \geq 1 - \left(\langle \boldsymbol{w}^*, \boldsymbol{x}_i^*\rangle + b^*\right), && i = 1,\ldots,n \\ & \left(\langle \boldsymbol{w}^*, \boldsymbol{x}_i^*\rangle + b^*\right) \geq 0, && i = 1,\ldots,n \end{aligned}$$

Equation (10)

$$\begin{aligned} \underset{\boldsymbol{w},b}{\text{minimize}} \quad & \frac{1}{2}\|\boldsymbol{w}\|^2 \\ \text{subject to} \quad & y_i\left(\langle \boldsymbol{w}, \boldsymbol{x}_i\rangle = b\right) \geq 1, && i = 1,\ldots,n \\ & z_i^- \leq \langle \boldsymbol{w}, \boldsymbol{x}_i\rangle + b \leq z_i^+, && i = n+1,\ldots,m \end{aligned}$$

Re-expression of Equation (10)

$$\begin{aligned} \underset{\boldsymbol{w},\xi,\xi^-,\xi^+,b}{\text{minimize}} \quad & \frac{1}{2}\|\boldsymbol{w}\|^2 + C\sum_{i=1}^{n}\xi_i + \tilde{C}\sum_{i=n+1}^{m}\left(\xi_i^- + \xi_i^+\right) \\ \text{subject to} \quad & y_i\left(\langle \boldsymbol{w}, \boldsymbol{x}_i\rangle + b\right) \geq 1 - \xi_i, && i = 1,\ldots,n \\ & z_i^- - \xi_i^- \leq \langle \boldsymbol{w}, \boldsymbol{x}_i\rangle + b \leq z_i^+ + \xi_i^+, && i = n+1,\ldots,m \\ & \xi_i \geq 0, && i = 1,\ldots,n \\ & \xi_i^- \geq 0, && i = n+1,\ldots,m \\ & \xi_i^+ \geq 0, && i = n+1,\ldots,m \end{aligned}$$

Equation (11)

$$\begin{aligned} &\underset{\boldsymbol{w},b}{\text{minimize}} \quad \frac{1}{2}\|\boldsymbol{w}\|^2 \\ &\text{subject to} \quad y_i(\langle \boldsymbol{w}, \boldsymbol{x}_i\rangle + b) \geq 1, \qquad i = 1, ..., n \\ &\qquad\qquad z_i^- \leq \langle \boldsymbol{w}, \boldsymbol{x}_i\rangle + b \leq z_i^+, \qquad i = n+1, ..., m \end{aligned}$$

Equation (13)

$$\begin{aligned} &\underset{\boldsymbol{w},\boldsymbol{\xi}}{\text{minimize}} \quad \frac{1}{2}\|\boldsymbol{w}\|^2 + C\sum_{i=1}^{n} W_i\xi_i \\ &\text{subject to} \quad y_i(\langle \boldsymbol{w}, \boldsymbol{x}_i\rangle + b) \geq 1 - \xi_i, \qquad i = 1, ..., n \\ &\qquad\qquad \xi_i \geq 0, \qquad i = 1, ..., n \end{aligned}$$

Equation (16)

$$z_{x_{i,j}}(\boldsymbol{x}) = \tfrac{1}{\sigma^2}(x^j - x_i^j)\ exp(-\tfrac{1}{2\sigma^2}\|\boldsymbol{x} = \boldsymbol{x}_i\|^2)$$

The original article has been corrected.

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Reference

1. Sanz, et al. Enhancing SVM for survival data using local invariances and weighting. BMC Bioinformatics. 2020;21:193. https://doi.org/10.1186/s12859-020-3481-2.