Errata and Corrections to "Device-Free Localization via Dictionary Learning With Difference of Convex Programming"

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Regretfully, in the Page 5603 of [1], the equations (13),(15) and (16) are incorrect due to the mistake in checking LaTeX.

The incorrect Eq.(13) is

$$\boldsymbol{x}^{(k+1)} = \text{Prox}_{\phi^{(k)},\lambda}(\boldsymbol{x}^{(k)} - \phi^{(k)} \triangledown \mathcal{L}(\boldsymbol{x}^{(k)}) + z^{(k)})$$

The correct Eq.(13) is

$$\boldsymbol{x}^{(k+1)} = \text{Prox}_{\phi^{(k)},\lambda}(\boldsymbol{x}^{(k)} - \frac{1}{\phi^{(k)}} \triangledown \mathcal{L}(\boldsymbol{x}^{(k)}) + \frac{1}{\phi^{(k)}} z^{(k)})$$

The incorrect Eq.(15) is

$$\boldsymbol{u}^{(k)} = \boldsymbol{x}^{(k)} - \phi^{(k)} \triangledown \mathcal{L}(x^{(k)})$$

The correct Eq.(15) is

$$\boldsymbol{u}^{(k)} = \boldsymbol{x}^{(k)} - \frac{1}{\phi^{(k)}} \triangledown \mathcal{L}(x^{(k)})$$

The incorrect Eq.(16) is

$$\begin{aligned} \boldsymbol{x}^{(k+1)} &= \text{ST}(\boldsymbol{u}^{(k)} + z^{(k)}, \frac{\lambda}{\phi^{(k)}}) \\ &= \text{sign}(\boldsymbol{u}^{(k)}) \circ \max(|\boldsymbol{u}^{(k)} + z^{(k)}| - \frac{\lambda}{\phi^{(k)}}, 0) \end{aligned}$$

The correct Eq.(16) is

$$\begin{aligned} \boldsymbol{x}^{(k+1)} &= \text{ST}(\boldsymbol{u}^{(k)} + \frac{1}{\phi^{(k)}} z^{(k)}, \frac{\lambda}{\phi^{(k)}}) \\ &= \text{sign}(\boldsymbol{u}^{(k)} + \frac{1}{\phi^{(k)}} z^{(k)}) \circ \max(|\boldsymbol{u}^{(k)} + \frac{1}{\phi^{(k)}} z^{(k)}| - \frac{\lambda}{\phi^{(k)}}, 0) \end{aligned}$$

In Algorithm 2, in line 6 and line 7, the corrections are

$$\boldsymbol{u}_j^{(k)} = \boldsymbol{x}_j^{(k)} - \frac{1}{\phi^{(k)}} \triangledown \mathcal{L}(\boldsymbol{x}_j^{(k)})$$

$$\boldsymbol{x}_j^{(k+1)} = \text{sign}(\boldsymbol{u}_j^{(k)} + \frac{1}{\phi^{(k)}} z_j^{(k)}) \circ \max(|\boldsymbol{u}_j^{(k)} + \frac{1}{\phi^{(k)}} z_j^{(k)}| - \frac{\lambda}{\phi^{(k)}}, 0)$$

Also in Algorithm 2, γ should be a positive number and greater than 1 according to Eq.(6).

References

[1] X. Li, S. Ding, Z. Li and B. Tan, "Device-Free Localization via Dictionary Learning with Difference of Convex Programming", *IEEE Sensors Journal*, vol. 17, no. 17, pp. 5599-5608, Sep. 2017.

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