

Errata for ‘Proximal Algorithms’

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July 13, 2014

1. On page 156 (§4.4.1), there is a typo in the fifth equation on the page, a z -update. The penalty term should be

$$(\rho/2)\|x^{k+1} - z + (1/\rho)y^k\|_2^2,$$

i.e., there is a sign error on the last term. (Thanks to Panagiotis Patrinos.)

2. On page 166, there is a sign error in Equation 5.9. The x -update should be

$$x_i^{k+1} := \mathbf{prox}_{f_i}(\bar{x}_i^k - u_i^k),$$

just as in Equation 5.6. (Thanks to Thomas Möllenhoff.)

3. On page 176, the last term in the Hessian of f should be $\mathbf{diag}(\phi_i''(x_i))$ rather than what is written there, since it should involve the second derivatives of the ϕ_i functions. (Thanks to Zoltan Szabo.)
4. On page 178 (§6.1.4), the paper states the following: “In general, when v is not in $\mathbf{dom} f$, $\mathbf{prox}_{\lambda f}(v) = \Pi_{\mathbf{dom} f}(v)$.” This is false. For example, if

$$f(x) = \begin{cases} (x-1)^2 & x \geq 0 \\ \infty & x < 0, \end{cases}$$

then $\mathbf{prox}_f(-1) \neq 0$. The method can be adjusted accordingly. (Thanks to Petter Strandmark.)

5. On page 180 (§6.2.1), Equation 6.5 erroneously refers to λ^* and η^* when the dual optimal points should be ν^* and η^* to be consistent with the definition of the dual function. Equation 6.5 should instead be

$$x^* = v - A^T \nu^* - C^T \eta^*.$$

(Thanks to Zoltan Szabo.)

6. On page 181 (§6.2.1), the definition of the dual QP in terms of the Gram matrix G should be

$$\begin{aligned} &\text{minimize} && (-1/2)(\nu, \eta)^T (GG^T)(\nu, \eta) + (Gv - (b, d))^T (\nu, \eta) \\ &\text{subject to} && \eta \geq 0 \end{aligned}$$

to be consistent with the dual problem at the top of page 180. Explicitly, there is a missing factor of $(-1/2)$ in the first term and the second term should have Gv replaced with $Gv - (b, d)$. (Thanks to Zoltan Szabo.)

7. On page 183, the example in the last paragraph of §6.3 should state that if $-v \in \mathcal{K}^*$, then $\Pi_{\mathcal{K}}(v) = 0$; there is a missing negative sign in the condition. In words, the *negative* dual cone gets projected to zero. (Thanks to Zoltan Szabo.)
8. On page 186, the lower bound of the initial search interval for bisection should be $\min_i v_i - (\lambda/n)$, not $\min_i v_i - (1/n)$. (Thanks to Zoltan Szabo.)

9. On page 194 (§6.7.4), Equation 6.14 should read

$$\Pi_{\mathcal{B}}(A) = \sum_{i=1}^n \Pi_{[-1,1]}(d_i) u_i u_i^T,$$

because the eigenvalues d_i of A could be negative, and they are being projected onto the ℓ_∞ ball $[-1, 1]$. Equation 6.14 as stated in the paper is inconsistent with the English description in the text and the rest of the section. (Thanks to Zoltan Szabo.)