

Errata - Introduction to Online Convex Optimization

Elad Hazan

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- **found by Zhize Li, section 8.4:** Algorithm 25 needs to be initialized by a point of full support, for the relative entropy (and hence regret bound) to be finite. Changed to start with uniform distribution.
- **found by Zhize Li, section 7.3.1:** The norm of $\|\mathbf{x}\|$ should be \sqrt{k} rather than k .
- **found by Naman Agarwal, lemma 6.2:** Replace $\hat{\ell}_t(i_t)$ with $\hat{\ell}_t(\mathbf{x}_t)$.
- **found by Nikhil Bansal, Section 6.5:** In proof of Theorem 6.9, Theorem 5.1 cannot be used directly, since the $\|\cdot\|_t$ norm is not shown to be the $\|\cdot\|_{\mathbf{x}_t}$ norm. Correction is to use Lemma 5.2 instead, and derive the RFTL bound, using Lemma 6.8 to get the local norm.
- **found by Raunak Kumar, Section 5.6:** AdaGrad incorporated an additional δI inconsistently in G_t . We have eliminated the δI altogether, using pseudo-inverse for the analysis, and tightened the regret bound.
- **found by Mitsuru Toyoda, Section 4.3:** the conditions $n \geq 1, T \geq 4$ changed to $n > 1, T \geq 8$.
- **found by Lin Chen, Section 7.5:** the η parameter in Theorem 7.2 needs to be $\frac{D}{2GT^{3/4}}$, changed from $\frac{G}{DT^{3/4}}$.
- **found by Jonathan Wolfram Siegel, Section 2.1:** Pythagorean theorem is true for inner-product norms, and not all norms.
- **found by Sheng Zhang, Section 6.1:** Lemma 6.1 mis-explained (also tightened the bound).