

# Errata for 'A geometric approach to robotic laundry folding'

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## 1 On the Optimization Method

The "Black Box Optimization" method cited in Appendix C was a needlessly complicated way of describing a fairly naive robust coordinate descent algorithm. It almost certainly isn't the optimal tool for the job: as the name "Black Box" suggests, I really didn't know anything about optimization at the time. Had I had a bit more ML know-how back then, I probably would have added a momentum term rather than scaled things like this, or whitened the input parameters, or at least had the step sizes initialize to something proportional to the scale of the features. I'm reasonably confident any principled algorithm you use will work just as well.

With that said, the algorithm listed in the paper is not only a bit arbitrary, but also false. In particular, there's a bizarre negative sign on line 11. This is either a typo or a typesetting error. Since the typesetters aren't around to defend themselves, I'll gladly blame them. It should be:

$$\delta_i \leftarrow \delta_i * 1.5 \tag{1}$$

The resulting algorithm is a very basic *maximization* algorithm. Initialize all step sizes to some  $\delta$ . For each feature, try taking a step in the same direction you did last time. If it scored higher, increase the step size: it means we're on the right track. If it failed, we know we've gone too far. Try taking an equally large backwards step and repeat. If it still fails, it

means the optimum is somewhere in between  $\pm\delta_i$  of the current location: start decreasing your step size and backtrack.

Note that I said “maximization”. In the paper we were actually concerned with *minimizing* an error function. This means either the given algorithm should be run with a score function  $S = -E$  (as our code did), or the inequality checks in lines 8 and 17 should be flipped.

Thanks to Jan Stria at CTU for notifying me of this error.