

DISCUSSION: ONE-STEP SPARSE ESTIMATES IN NONCONCAVE PENALIZED LIKELIHOOD MODELS: WHO CARES IF IT IS A WHITE CAT OR A BLACK CAT?¹

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1. An insider's minor comments. Section 2.3 seems to be the reason that I am a discussant. There, it was first stated that the proposed LLA algorithm is an instance of the MM algorithm, as termed by Lange, Hunter and Yang [8]. Then it was shown, under certain conditions, that it is also an EM algorithm. My initial reaction was “hmmm, the authors’ reading of Lange, Hunter and Yang [8] must have ceased before reaching its discussions,” because a more general “MM = EM” result using the same Laplace transform technique was the base for a key inquiry of Meng [10], a discussion of Lange, Hunter and Yang [8]. Upon a more careful reading, I realized that the authors’ construction, though mathematically equivalent to mine, gives a different interpretation to the constructed missing data/latent variable. This is rather interesting, especially if my initial reaction was correct.

For the current paper, this “MM = EM” result appears to be of minor interest, especially because its potential benefit is not explored in the paper. Instead, the only punch line seems to be a logically unsubstantiated one: “Thus, Theorem 3 also indicates that MM algorithms are more flexible than EM algorithms.” To clarify these issues, which seems to be what I have been asked to do, I’ll focus my discussion first on this algorithmic connection and qualify the statements that I just made. I will then pose some questions going beyond those algorithmic and computational considerations. (The two parts are connected via the “cat” title, for those who are patient enough to read both.)

To do so most effectively, let me invoke an author’s privilege to reproduce Section 2 of Meng [10] in its entirety, to map out its mathematical connections with Section 2.3 of the current paper. The acronym “SM” below was my suggestion because the general recipe Lange, Hunter and Yang [8] put forward consists of a “Surrogate step” and a “Maximization/Minimization step”; in their rejoinder, Lange, Hunter and Yang [8] coined the term “MM,” partially in fear of the association of “SM” with “S&M.” The “alphabet soup” phrase was used by Lange, Hunter and Yang [8] to describe the collection of acronyms in the EM literature; indeed, for readers who enjoy collecting acronyms, the “GAECM” below is another treasure to hunt!

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