On the Convergence of Mean Field Procedures for MRF's

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EDICS 1.4
May 3, 2000

In [1], Zhang attempts to establish convergence of a mean-field iteration for an Ising Markov random field for large values of the hyperparameter β. Unfortunately, equation (16b), which states

$$|T_\delta(u_1) - T_\delta(u_2)| \leq |u_1 - u_2|,$$

is not correct for the function $T_\delta(u)$ defined in (15) and Fig. 2. In fact, any function that satisfies (16b) for all u_1 and u_2 is necessarily a continuous function, unlike the particular $T_\delta(u)$ defined in (15).

Thus the convergence of the mean field iteration remains an important open question for large β.

References

[1] J Zhang. The convergence of mean field procedures for MRF's. *IEEE Tr. Im. Proc.*, 5(12):1662–5, Dec. 1996.