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ERRATUM

Donsker type theorems for nonparametric maximum likelihood estimators

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In condensing the proof of Lemma 4 of Nickl (2007) in the final revision, an unjustified claim was used. Expression (30), and then also (32), are incorrect as they stand. The lemma however, is correct, as can either be seen by the original proof as given in Nickl (2005), or the following, simpler argument, replacing the paragraph including (30):

Let ε satisfy $0 < \varepsilon \leq \min(1, \beta/(C_t\eta))$. In view of (28), since $\hat{p}_n$ is a maximizer of $L_n(\cdot)$ over $\mathcal{P}_t$, and since $L_n(\cdot)$ is Fréchet differentiable at $\hat{p}_n$ by Proposition 3, the derivative of $L_n(\cdot)$ at $\hat{p}_n$ in the direction of $\hat{h}_n(w)$ has to be nonpositive eventually, that is, we have that,

$$DL_n\left(\hat{p}_n\right)\left(w - \hat{p}_n + p_0\right) \leq 0 \quad \text{for every } w \in \mathcal{U}_{t,\eta,0}$$

holds eventually (where we have divided by $\varepsilon > 0$). Since $\mathcal{U}_{t,\eta,0}$ also contains $-w$, we conclude that

$$|DL_n\left(\hat{p}_n\right)(w)| \leq DL_n\left(\hat{p}_n\right)\left(\hat{p}_n - p_0\right) \quad \text{for every } w \in \mathcal{U}_{t,\eta,0}$$

holds.

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Accordingly expression (32) has to be replaced by

$$\left|DL_n(\hat{p}_n)(s(\Pi(f)))\right| \leq DL_n(\hat{p}_n)(\hat{p}_n - p_0) \quad \text{for every } f \in \mathcal{U}_{t,B}$$

which is sufficient for all remaining derivations.

References

1. Nickl, R.: Beiträge zur Theorie Empirischer Prozesse und der Maximum-Likelihood Schätzung in Funktionenräumen. Univ. Diss., Universität Wien (2005)
2. Nickl, R.: Donsker-type theorems for nonparametric maximum likelihood estimators. Probab. Theory Relat. Fields **138**, 411–449 (2007)