Errata for *Introduction to Empirical Processes and Semiparametric Inference* (Kosorok, 2008, Springer)

Page 12, line 42: $N = [H^{-1}(a) - \epsilon, H^{-1}(b) + \epsilon]$ should be $N = [H(a) - \epsilon, H(b) + \epsilon]$.

Page 14, line 25: $\mathbb{R}$ should be $\bar{\mathbb{R}}$.

Page 16, line 3: $Ef^2(X) < \infty$ should be $E[f(X) - Pf]^2$.

Page 16, line 29: $\|g\|_{r,P}$ should be $\|g\|_{P,r}$.

Page 16, line 31: $\|l - u\|_{r,P}$ should be $\|g\|_{P,r}$, and 'bracket l, u' should be 'bracket $[l, u]$'.

Page 18, Theorem 2.4: $\sup_Q N(\epsilon \|F\|_{1,Q}, \mathcal{F}, L_1(Q))$ should be $\sup_Q N(\epsilon \|F\|_{Q,1}, \mathcal{F}, L_1(Q))$.

Page 37, line -22: '$P_\theta \|\dot{\ell}_{\tilde{\theta}} - \dot{\ell}_\theta\|^2 \to 0$' should be 'both $P_\theta \|\dot{\ell}_{\tilde{\theta}} - \dot{\ell}_\theta\|^2 \to 0$ and $P_{\tilde{\theta}}[\dot{\ell}_{\tilde{\theta}}\dot{\ell}'_{\tilde{\theta}}] \to P_\theta[\dot{\ell}_\theta \dot{\ell}'_\theta]$'.

Page 37, line -1: should be 'there exists a measurable function $\tilde{\Psi}_P : \mathcal{X} \mapsto \mathbb{R}^k$ in $\dot{\mathcal{P}}_P$ such that'.

Page 38, line 3: 'P' should be '$\mathcal{P}$'.

Page 48, Exercises 3.5.1: '$P_\theta \|\dot{\ell}_{\tilde{\theta}} - \dot{\ell}_\theta\|^2 \to 0$' should be 'both $P_\theta \|\dot{\ell}_{\tilde{\theta}} - \dot{\ell}_\theta\|^2 \to 0$ and $P_{\tilde{\theta}}[\dot{\ell}_{\tilde{\theta}}\dot{\ell}'_{\tilde{\theta}}] \to P_\theta[\dot{\ell}_\theta \dot{\ell}'_\theta]$'.

Page 61, line 14: in the expression for $\breve{g}(W, 0)$, $-\int_0^u \frac{1\{W \geq s\} d\Lambda(s)}{[1 - \Delta\Lambda(s)]\pi(s)}$ should be $-S(u) \int_0^u \frac{1\{W \geq s\} d\Lambda(s)}{[1 - \Delta\Lambda(s)]\pi(s)}$.

Page 83, line 4: $\mathcal{O} \in \mathcal{A}^*$ should be $\mathcal{O} \subset \mathcal{A}^*$.

Page 83, line 26, in the definition of 'measure' (iii): 'For a disjoint sequence' should be 'For any disjoint sequence'.

Page 87, line -2 and line -1: 'σ compact' should be 'separable'.

Page 88: The content of Theorem 6.2 (Arzelà-Ascoli) should be replaced by the following:

(a) The closure of $K \subset \ell^\infty(T)$ is compact if and only if

    (i) $\sup_{x \in K} |x(t_0)| < \infty$, for some $t_0 \in T$; and

    (ii) for some semimetric ρ making T totally bounded,

$$\lim_{\delta \downarrow 0} \sup_{x \in K} \sup_{s,t \in T : \rho(s,t) < \delta} |x(s) - x(t)| = 0.$$

(b) The set $K \subset \ell^\infty(T)$ is σ-compact if and only if $K \subset LC(T, \rho)$, where $LC(T, \rho)$ is the subset of $UC(T, \rho)$ consisting of bounded functions x with

$$\sup_{\delta > 0} \sup_{s,t \in T : \rho(s,t) < \delta} \frac{|x(s) - x(t)|}{\delta} < \infty.$$

(c) The closure of $K \subset \ell^\infty(T)$ is separable if and only if $K \subset UC(T, \rho)$ for some semimetric ρ making T totally bounded.

Page 88, third line after statement of Theorem 6.2: $UC(T, \rho)$ should be replaced by $LC(T, \rho)$.

Page 96, line -2: The Proof of Theorem 6.2 needs to be corrected and modified to correspond to the new version of Theorem 6.2 given above. This corrected proof will be provided later.

Page 125, in Exercises 7.5.5: 'where (T, ρ) is not necessarily totally bounded' should be 'where (T, ρ) is totally bounded'.

Page 130, in the last sentence of Lemma 8.2: K should be $K < \infty$.

Page 134, one line below (8.6): 'all pairs of endpoints' should be 'all such pairs of endpoints'.

Page 150, line -8: 'because it is also bounded by the right-hand side of (8.11)' should be 'by choosing $f_0 = 0$'.

Page 151, line -14: $\hat{\theta}_n \to 0$ should be $\theta_n \to 0$.

Page 157, three lines below Theorem 9.2: $N(\epsilon \| F_{1,Q} \|, \mathcal{F}, L_1(Q))$ should be $N(\epsilon \| F_{Q,1} \|, \mathcal{F}, L_1(Q))$.

Page 158, line 3 of Corollary 9.5: $0 < \epsilon < 1$, should be canceled.

Page 166, line 1 of Lemma 9.18: 'function' should be 'functions'.

Page 187, line -9: $\tilde{\mathbb{P}}_n \equiv n^{-1} \sum_{i=1}^n (\xi/\bar{\xi}) \delta_{X_i}$ should be $\tilde{\mathbb{P}}_n \equiv n^{-1} \sum_{i=1}^n (\xi_i/\bar{\xi}) \delta_{X_i}$.

Page 190, last sentence of Theorem 10.8: $P^*(X \in \mathbb{D}_0) = 1$ should be $P_*(X \in \mathbb{D}_0) = 1$.

Page 204: Exercise 10.5.1 (a) is not necessarily true.

Page 224, in Theorem 11.20 condition (E): $\rho_n(s,t) \equiv \sqrt{E|f_{n,s}(X_1) - f_{n,t}(X_2)|}$ should be $\rho_n(s,t) \equiv \sqrt{E|f_{n,s}(X_1)_1 - f_{n,t}(X_1)|^2}$.

Page 238, one line below '12.2.2 Integration': $[a,b] \in \bar{\mathbb{R}}$ should be $[a,b] \subset \bar{\mathbb{R}}$.

Page 240, line 1: T_2 should be $\sqrt{\frac{mn}{m+n}} T_2$.

Page 259, in Corollary 13.6: $\|X(\theta)\|_{\mathbb{L}} \to 0$ should be $\|X(\theta) - X(\theta_0)\|_{\mathbb{L}} \to 0$.

Page 260, line 5: $\|X(\theta)\|_{\mathbb{L}} \to 0$ should be $\|X(\theta) - X(\theta_0)\|_{\mathbb{L}} \to 0$.

Page 275: (14.9) should be $\lambda \mapsto \|\lambda\| \equiv \sup_{s \neq t: s, t \in C} \left| \log \frac{\lambda(t) - \lambda(s)}{t - s} \right|$.

Page 278, six lines below 'Consistency': 'at two or points' should be 'at two or more points'.

Page 278, line 1 of Lemma 14.7: 'give' should be 'given'.

Page 278, line -3, line -2 and line -1: all the '$\leq$'s should be '$<$'s.

Page 279, line 1 and line 2: 'at a point s_0 to the left of (or equal to) t' should be 'at a point s_0 or at an interval with maximum value s_0 to the left of t'.

Page 279, line 2: 'the point' should be 'the maximum point'.

Page 279, line 3: 'furthest away' should be 'furthest above'.

Page 279, line 4, line 7, line 8 and line 13: all the '$\leq$'s should be '$<$'s.

Page 279, line 10: 'argmax values of $x \mapsto \hat{s}_n(f(t) + xn^{-1/3})$ should be 'limiting behavior of $\hat{s}_n(f(t) + xn^{-1/3}) - t$.

Page 279, line 2: 'the point' should be 'the maximum point'.

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Page 280, five lines above '14.6 Exercises': $\mathbb{Z}$ should be $\mathbb{Z}(h)$.

Page 292, line 12: $\log a(U))$ should be $\log a(U)$.

Page 295, the first term in the RHS of (15.16) should be $\int_0^\tau \log \frac{PW(s;\theta_0)}{\mathbb{P}_n W(s;\hat{\theta}_n)} \mathbb{P}_n dN(s)$.

Page 295: (15.17) should be

$$\int_0^\tau \log \frac{PW(s;\theta_0)}{\mathbb{P}_n W(s;\hat{\theta}_n)} \mathbb{P}_n dN(s) - \int_0^\tau \log \frac{PW(s;\theta_0)}{PW(s;\hat{\theta}_n)} dQ_0(s) \to^{as*} 0.$$

Page 295, in (15.19): $\int_0^\tau \frac{PW(s;\theta_0)}{PW(s;\hat{\theta}_n)} dQ_0(s)$ should be $\int_0^\tau \log \frac{PW(s;\theta_0)}{PW(s;\hat{\theta}_n)} dQ_0(s)$.

Page 298, two lines above (15.20): $\dot{\psi}_{\theta_0}(h)$ should be $\dot{\psi}_{\theta_1}(h)$.

Page 300, in (15.21): $\frac{\partial 2}{(\partial t)2}$ should be $-\frac{\partial 2}{(\partial t)2}$.

Page 328, in Theorem 18.1 line 4: $\breve{\psi}$ should be $\breve{\psi} : \mathcal{H} \mapsto L_2 0(P)$.

Page 338, in Theorem 18.4: $\limsup$ should be $\liminf$.

Page 339, line -3: 'regular and' should be deleted.

Page 341, line 5 of Lemma 18.10: 'for some constant $c < \infty$' should be 'for some constant $c < \infty$ and all $d \in \mathbb{D}$'.

Page 342, line 8: 'infinite-dimension' should be 'infinite-dimensional'.

Page 343, line 3: 't=1' should be 't=0'.

Page 371, line 20: 'boots' should be 'bootstrap approximates'.

Page 398, line 23: 'occur empirical' should be 'occurred simultaneously with the empirical'.

Page 463 and Page 464: switch ordering of Kim, J. and Kim, Y. references.