CORRECTION TO "MARKOVIAN DECISION PROCESSES WITH RECURSIVE REWARD FUNCTIONS"

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By

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In the above article (Bull. Math. Statist. Vol. 15, No. 3-4, 79-91), in Theorem 5.1 and its Corollary we need to set Assumption (I) in addition to Assumption (II). The proof of Theorem 5.1 made in the article is incomplete. Line 3 from the bottom of page 85-line 7 from the top of page 86 should read:

For $\gamma=\varepsilon/N$ there exists a Borel measurable map f_N such that

$$\begin{aligned} E^{N-1\pi}g &= \pi_N qg(s_N, a_N, s_{N+1}, E^{N\pi}g) \\ &\leqq f_N qg(s_N, a_N, s_{N+1}, E^{N\pi}g)+\gamma/K_1K_2\cdots K_{N-1} \\ &\qquad \text{with } p\pi_1 q\cdots\pi_{N-1}q\text{—prob. } 1\,. \end{aligned}$$

That is,

$$\begin{aligned} E^{N-1\pi}g &\leqq E^{(f_N, N\pi)}g+\gamma/K_1K_2\cdots K_{N-1} \\ &\qquad \text{with } p\pi_1 q\cdots\pi_{N-1}q\text{—prob. } 1\,. \end{aligned}$$

By Assumptions (I) and (II) we have

$$\begin{aligned} &\pi_{N-1}qg(s_{N-1}, a_{N-1}, s_N, E^{N-1\pi}g) \\ &\quad\leqq \pi_{N-1}qg(s_{N-1}, a_{N-1}, s_N, E^{(f_N, N\pi)}g+\gamma/K_1K_2\cdots K_{N-1}) \\ &\qquad\qquad \text{with } p\pi_1 q\cdots\pi_{N-1}q\text{—prob. } 1 \\ &\quad\leqq \pi_{N-1}qg(s_{N-1}, a_{N-1}, s_N, E^{(f_N, N\pi)}g)+\gamma/K_1K_2\cdots K_{N-2} \\ &\qquad\qquad \text{with } p\pi_1 q\cdots\pi_{N-2}q\text{—prob. } 1\,. \end{aligned}$$

Using this procedure N times will produce a Markov policy $\pi^*=\{f_1, f_2, \cdots\}$ such that

$$\begin{aligned} E^{\pi}g &\leqq E^{(f_1, f_2, \cdots, f_N, N\pi)}g+N\gamma \\ &= E^{\pi^*}g+\varepsilon \qquad \text{with } p\text{—prob. } 1\,, \end{aligned}$$

which completes the proof.

Replace $\|g\|$ in line 9 from the bottom of page 89 by L.