Erratum to
Fixed-Relative-Deadline Scheduling of Hard Real-Time Tasks with
Self-Suspensions

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In [1], we propose a fixed-relative deadline scheduling algorithm based on an equal-deadline assignment (EDA) for self-suspending sporadic (SSS) task systems. Thanks to Mr. Wen-Hung Kevin Huang from TU Dortmund, one typo was found in Theorem 3. This erratum is served to correct the typo.

• Typo: the exact test in Theorem 3 in [1] was

\[ dbf_i^{EDA}(t) = \begin{cases} 
0 & 0 \leq t < \frac{T_i - S_i}{2} \\
C_{i,\text{max}} & \frac{T_i - S_i}{2} \leq t < T_i - S_i \\
C_{i,1} + C_{i,2} & t = T_i - S_i \\
dbf_i^{EDA}(t - \left\lfloor \frac{t - (T_i - S_i)}{T_i} \right\rfloor T_i) + \left( \left\lfloor \frac{t - (T_i - S_i)}{T_i} \right\rfloor + 1 \right)(C_{i,1} + C_{i,2}) & t > T_i - S_i 
\end{cases} \]

One term in the last case was not put by a mistake while the writing of the paper accidentally. To correct this, we also alert the boundary condition, and the correct test should be

\[ dbf_i^{EDA}(t) = \begin{cases} 
0 & 0 \leq t < \frac{T_i - S_i}{2} \\
C_{i,\text{max}} & \frac{T_i - S_i}{2} \leq t < T_i - S_i \\
C_{i,1} + C_{i,2} & t = T_i - S_i \\
dbf_i^{EDA}(t - \left\lfloor \frac{t - (T_i - S_i)}{T_i} \right\rfloor T_i) + \left( \left\lfloor \frac{t - (T_i - S_i)}{T_i} \right\rfloor + 1 \right)(C_{i,1} + C_{i,2}) & t > T_i - S_i 
\end{cases} \]

This typo does not affect the rest of the paper. When we applied the arithmetics and demonstrated by using figures, we already used the correct definition of \( dbf_i^{EDA}(t) \) in all the other steps for performing the linear approximation and the analyses. Therefore, the correctness of the speedup factors remains.

• Simplification: While preparing this erratum, we also noticed that the last case in the exact test in Theorem 3 in [1] can be simplified as

\[ dbf_i^{EDA}(t) = \begin{cases} 
0 & 0 \leq t < \frac{T_i - S_i}{2} \\
C_{i,\text{max}} & \frac{T_i - S_i}{2} \leq t < T_i - S_i \\
C_{i,1} + C_{i,2} & t = T_i - S_i \\
\left\lfloor \frac{t - (T_i - S_i)}{T_i} \right\rfloor T_i + \left\lfloor \frac{t}{T_i} \right\rfloor \left( C_{i,1} + C_{i,2} \right) & t > T_i - S_i 
\end{cases} \]

References