

Erratum for “Resource Minimization Job Scheduling”

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This is an erratum for “Resource Minimization Job Scheduling” [1]. There is a mistake in the analysis of the algorithm presented in the paper, which invalidates the main result of the paper.

This note refers to the full version of the paper [2], available from the authors’ webpages. The mistake occurs in the proof of Claim 2. The algorithm rounds the solution of $\text{LP}(T)$, where T is the time interval corresponding to the whole timeline. The linear program $\text{LP}(T)$ is defined recursively, and uses solution values of linear programs $\text{LP}(I)$ for intervals I that are strictly contained in T . Given such an interval I , we have a sub-problem $\mathcal{J}(I)$ associated with it, that includes all jobs whose time windows are contained in I . The problem is that, if we restrict the optimal LP-solution of $\text{LP}(T)$ to the jobs participating in $\mathcal{J}(I)$, the resulting LP-solution is not necessarily a valid LP-solution for $\text{LP}(I)$. In particular, constraint (2) may be violated. The assumption that we obtain a valid solution for $\text{LP}(I)$ is critical to the proof of Claim 2, which in turn is critical to the correctness of the algorithm.

The best current approximation ratio for this problem therefore remains $O(\sqrt{\log n / \log \log n})$, due to [3].

We thank Kirk Pruhs for pointing out this error to us.

References

- [1] Julia Chuzhoy and Paolo Codenotti. Resource minimization job scheduling. In *APPROX-RANDOM*, volume 5687 of *Lecture Notes in Computer Science*, pages 70–83. Springer, 2009.
- [2] Julia Chuzhoy and Paolo Codenotti. Resource minimization job scheduling. full version, available at <http://ttic.uchicago.edu/~cjulia/papers/machmin-full.pdf>, 2009.
- [3] Julia Chuzhoy, Sudipto Guha, Sanjeev Khanna, and Joseph Naor. Machine minimization for scheduling jobs with interval constraints. In *FOCS*, pages 81–90, 2004.