Increasing Machine Speed in On-line Scheduling of Weighted Unit-length Jobs in Slotted Time

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Abstract. We consider the following scheduling problem: Given a set of unit-length jobs characterized by release times, deadlines and weights an algorithm must pick at most one job for each unit of time with the goal of maximizing the total weight of the chosen jobs. An on-line algorithm is an algorithm which has no information about a job before its release time. In the basic version of this problem it is known that any on-line algorithm can be outperformed by an optimal off-line algorithm by a factor of $\frac{1+\sqrt{5}}{2} - \varepsilon$ on some instance. In this paper we examine the effect of increasing the on-line algorithm's speed and show that no speedup can fully compensate for the lack of complete information.

Key words: scheduling, on-line algorithms, buffer management

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