Institut for Matematik og Datalogi
Syddansk Universitet

April 26, 2017
JFB

On-Line Algorithms – F17 – Lecture 15

Lecture, April 18

We completed the problems from April 7. Then we covered section 10.4.2. We covered up through section 12.2.1 in chapter 12 in the textbook.

Lecture, April 21

We will continue with chapter 12 in the textbook, probably finishing up through section 12.2.3. We may begin on the article "Online Bin Packing with Advice", Joan Boyar, Shahin Kamali, Kim S. Larsen, Alejandro López-Ortiz. *Algorithmica*, 74(1): 507-527, 2016. The publication is available through the course's homepage.

Lecture, April 26

We will continue with the article on bin packing with advice.

Problems for April 28

1. Go through the proofs of Theorems 12.2 and 12.3 for $N = 4$.
2. Prove that makespan on related machines is NP-hard. Prove the same for restricted machines. Prove that the classical bin packing problem is NP-hard.
3. In the algorithm SLOWFIT$_\Lambda$, what if some other value than 2 is used in $i = \arg\min_k\{l_j(k) + r_{j+1}(k) \leq 2\Lambda\}$? How does Theorem 12.4 change?
4. For makespan on identical machines, show how to use the "slowfit" idea for an algorithm which is 2-competitive when the optimal value is known.