

DM19 – Algorithms and Complexity – E04 – Lecture 7

Announcement

There will be a colloquium on “Planning in the airline industry - problems, methods and results”, by Jens Clausen, from DTU and DSB S-Tog, on Wednesday, October 27, at 14:15, in U2. More information is available at http://www.imada.sdu.dk/Events/CS_Colloquia/schedule.html.

Lecture, October 18

We covered section 32.4 on string matching and began on Huffman codes from section 16.3 in the textbook (note that the greedy choice property and the optimal substructure property are defined in section 16.2), covering up through Lemma 16.2.

Lecture, October 25

We will finish with Huffman codes. Then, we will begin on NP-completeness from chapter 34 in the textbook and the section by Papadimitriou and Steiglitz from the first set of notes. This will include a brief introduction to undecidability. For more details on undecidability, see chapter 5 of the textbook by Lewis and Papadimitriou, which is on reserve for DM17 in the library.

Lecture, November 1

We will continue with NP-completeness from chapter 34 in the textbook and the section by Papadimitriou and Steiglitz from the first set of notes.

Problems to be discussed October 28 and November 5

1. 16.3-7.

2. 34.1-3, 34.1-5.
3. Suppose that there is a language L for which there is an algorithm that accepts any string $x \in L$ in polynomial time and rejects any $x \notin L$, but this algorithm runs in super-polynomial (more than polynomial) time if $x \notin L$. Argue that L can be decided in polynomial time.
4. Define an algorithm to show that SATISFIABILITY is in NP.
5. 34.2-3, 34.2-5, 34.2-8, 34.2-10.
6. 34.3-2, 34.3-6.