

COMPLEXITY THEORY

Lecture 26: Summary and Consultation

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Knowledge-Based Systems

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More recent versions of this slide deck might be available.
For the most current version of this course, see
https://iccl.inf.tu-dresden.de/web/Complexity_Theory/en

Summaries and Outlooks

Summary and Outlook (1)

Things we covered in this course:

- Introduction and Organisation
- Turing Machines and Languages
- Undecidability and Recursion (2)
- Time Complexity and Polynomial Time
- NP and NP Completeness (3)
- Space Complexity: PSpace, L, NL (2)
- Hierarchy Theorems and Gaps (2)
- P vs. NP: Ladner's Theorem
- P vs. NP and Diagonalisation
- Alternation
- The Polynomial Hierarchy
- Questions and Answers
- Circuit Complexity and Parallel Computation (2)
- Probabilistic TMs and Complexity Classes (3)
- Quantum Computing (2)
- **Interactive Proofs (bonus)**

Things we did not cover here:

- Approximation
- Cryptography
- More quantum computation
- Derandomisation and Pseudo-Random Numbers
- Counting Complexity / Function Problems
- Average Case Complexity
- Descriptive Complexity
- Parametrised Complexity
- ...