

3.1 Savitch's theorem

3.2 PSPACE and strategies for game playing

4. \mathcal{NL} -completeness


4.1 Certificate definition of \mathcal{NL} : Read-once certificates


4.2 $\mathcal{NL} = \text{co}\mathcal{NL}$

See


 [Sanjeev Arora, Boaz Barak:](#)
Computational Complexity — A Modern Approach,
p. 82–88, Cambridge University Press: Cambridge–New York–Melbourne, 2009

Further references:

 Larry J. Stockmeyer, Albert R. Meyer:
Word problems requiring exponential time,
Proceedings of the 5th Symposium on Theory of Computing, p. 1–9 (1973)
This paper contains some important PSPACE-completeness results.

 Albert R. Meyer, Larry J. Stockmeyer:
The equivalence problem for regular expressions with squaring requires exponential space,
Proceedings of the 13th Annual Symposium on Switching and Automata Theory,
p. 125–129 (1972)
This paper contains an EXPSPACE-completeness result.

And here an \mathcal{NL} -machine based proof for $\mathcal{NL} = \text{co}\mathcal{NL}$:

 Holenstein, Thomas
Complexity Theory,
p. 13–14, Script, ETH Zürich, 2010