Cover Automata

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Finite Automata (5 min)

- for finite languages
- we have the longest length of a word l
- acyclic graph

- Extension: add a counter to the automaton
- check w: if length(w)>l reject w
  else run w on DFA

Cover Automata

- DFA with a counter, for finite languages
- Variation of Hopcroft's algorithm exists
- Still O(n log n)
- We have still determinsm
- We lose the uniquess of the minimal machine
- In real life around 7% improvement

Other DFCA result: incremental construction

- Incremental construction of DFCA (save space and time)

Algorithm	States	Memory req.	Time/time with trie	l	#Σ
Körner	3905	70k	1.512s/1.961s	5	5
Incremnt.	18	1.8k	0.461s	5	5
Körner	19530	1.4M	40.52s/52.706s	6	5
Incremnt.	21	2.2k	3.196s	6	5
Körner	97655	7.0M	24min 49.26s/34min 6.944s	7	5
Incremnt.	24	2.7k	22.420s	7	5

Thank you !!!