

From ATL tableaux to Alternating Automata

Highlights 2013

Amélie David and Serenella Cerrito

Laboratoire IBISC
Université d'Evry Val d'Essonne, France

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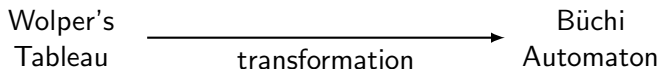


Motivation: satisfiability of ATL formulas

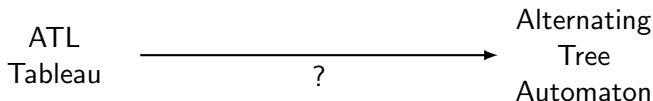


Motivation: satisfiability of ATL formulas

LTL



ATL (Alternating-time Temporal Logic)



[Goranko,Shkatov/2009]

[Goranko,van Drimmelen/2006]

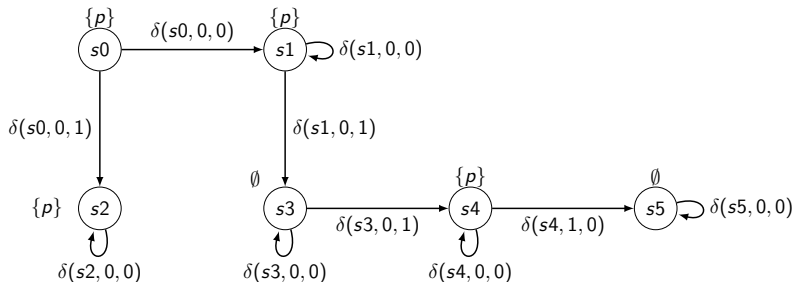
Problem

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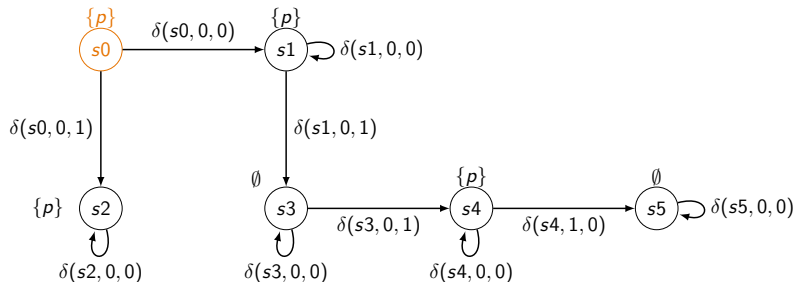
Concurrent Game Structure



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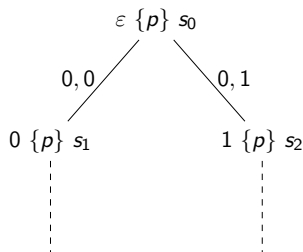
Concurrent Game Structure



Unwind the model into a tree - our proposal

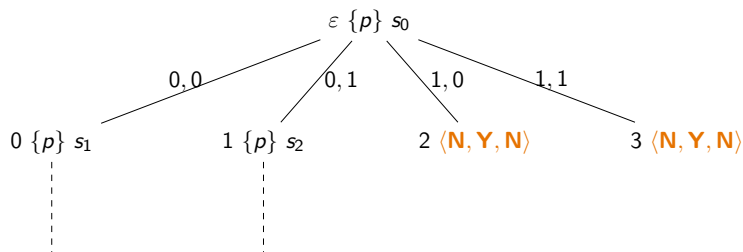
$$\varepsilon \in \{p\} s_0$$

Unwind the model into a tree - our proposal

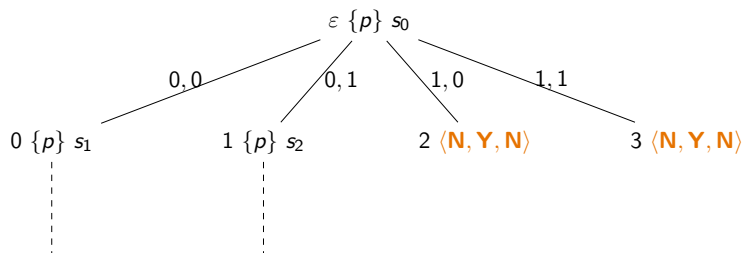


Agent 1 has only 1 choice – Agent 2 has 2 choices

Unwind the model into a tree - our proposal



Unwind the model into a tree - our proposal



► From the ATL tableau: construction of a new automaton
“Joker Automaton” able to read this kind of tree

Conclusion

- ➡ First step to transform a tableau into an alternating tree automaton for ATL.



[Goranko, Shkatov/2009]

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[Goranko, Shkatov/2009]

Perspective

- Add to the implementation TATL (Tableaux for ATL) the implementation of the Joker Automaton

Thank you for your attention!

Any Questions?