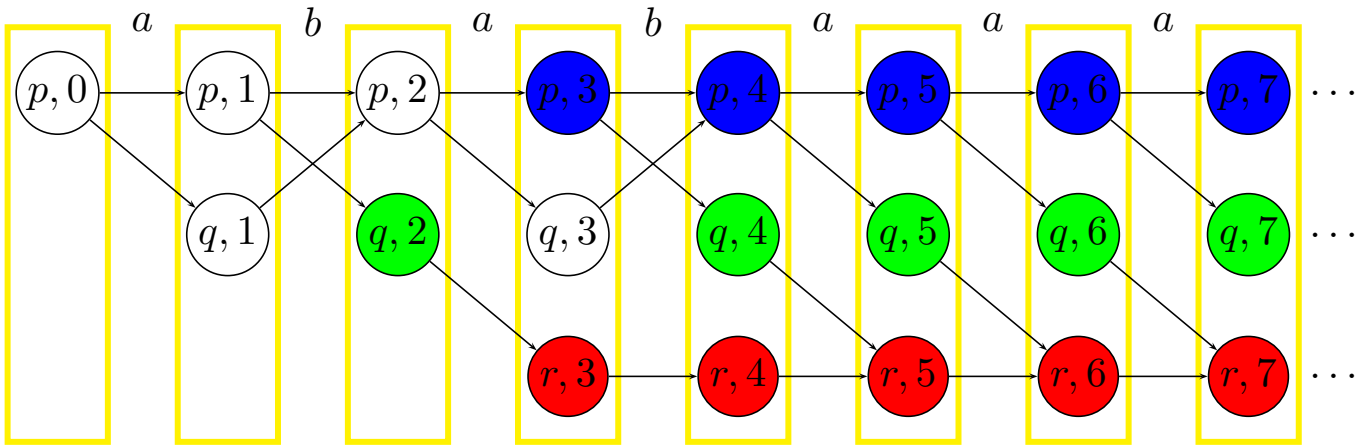
Automata, Games & Verification

Summary #4

Today at 2:15pm in SR 016:
Seminar "Games, Synthesis, and Robotics"
Hierarchical Synthesis of Hybrid Controllers from Temporal Logic Specifications

Complementation

Theorem 1. *For each Büchi automaton $\mathcal{A}$ there exists a Büchi automaton $\mathcal{A}'$ such that $\mathcal{L}(\mathcal{A}') = \Sigma^\omega \setminus \mathcal{L}(\mathcal{A})$.*



Muller Automata

Definition 1. *A (nondeterministic) Muller automaton $\mathcal{A}$ over alphabet Σ is a tuple (S, I, T, F):*

- S, I, T *: defined as before*
- $\mathcal{F} \subseteq 2^S$ *: set of accepting subsets, called the table.*

Definition 2. *A run r of a Muller automaton is accepting iff $In(r) \in F$*

Theorem 2. *For every (deterministic) Büchi automaton $\mathcal{A}$, there is a (deterministic) Muller automaton $\mathcal{A}'$, such that $\mathcal{L}(\mathcal{A}) = \mathcal{L}(\mathcal{A}')$.*

Theorem 3. *For every nondeterministic Muller automaton $\mathcal{A}$ there is a nondeterministic Büchi automaton $\mathcal{A}'$ such that $\mathcal{L}(\mathcal{A}) = \mathcal{L}(\mathcal{A}')$.*