

Sequential P Systems with Active Membranes Working on Sets

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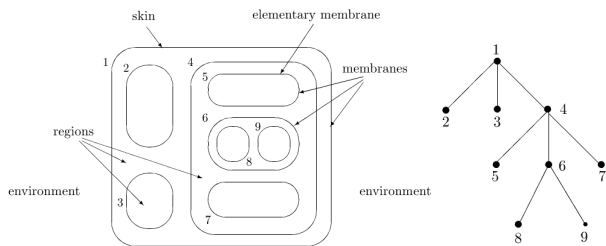
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Outline
Overview of formal models
Sequential active set membrane systems

P systems
Models with set semantics

Membrane structure



- Multisets
- Rewriting rules
- Passive vs. Active

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Computation

- Maximal parallel vs. sequential
- Language
 - generating mode
 - accepting mode

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Reaction systems

TODO: definition

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- 1 Overview of formal models
 - P systems
 - Models with set semantics
- 2 Sequential active set membrane systems
 - Original semantics
 - inject-or-create semantics
 - wrap-or-create semantics

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P system with active membranes

- $\Pi = (\Sigma, C_0, R_1, \dots, R_m)$
- $C = (T, I, c)$
 - $I : V(T) \rightarrow \{1, \dots, m\}$
 - $c : V(T) \rightarrow \mathbb{N}^\Sigma$
- Rewriting rules
 - $u \rightarrow v$
 - $u \rightarrow v\delta$
 - $u \rightarrow [{}_j v]_j$,
where $u \in \mathbb{N}^\Sigma$, $|u| \geq 1$ and $v \in \mathbb{N}^\Sigma \times \{\cdot, \uparrow, \downarrow\}$

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Multiset vs. set semantics

- How realistic is the counting?
- Effectiveness of verification techniques
- No conflict (objects can participate as reactants in as many rules as they want)

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Set membrane systems

- Alhazov [?]: multiplicities of objects are ignored R , with active membranes universal
- Kleijn, Koutny [?]: min-enabled computational step \Rightarrow sequential R
- maximal parallel \Rightarrow deterministic

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Sequential active set membrane systems

TODO: definition

Proof of universality

TODO: proof of universality

inject-or-create

TODO: definition

inject-or-create

TODO: proof of universality

wrap-or-create

TODO: definition

wrap-or-create

TODO: proof of universality

Thanks for your attention!