

Zamin, an Agent Based Artificial Life Model

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Summery

- Artificial Life?
 - Zamin's Structure
 - Zamin's Creatures
 - Experimental Results
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About Artificial Life

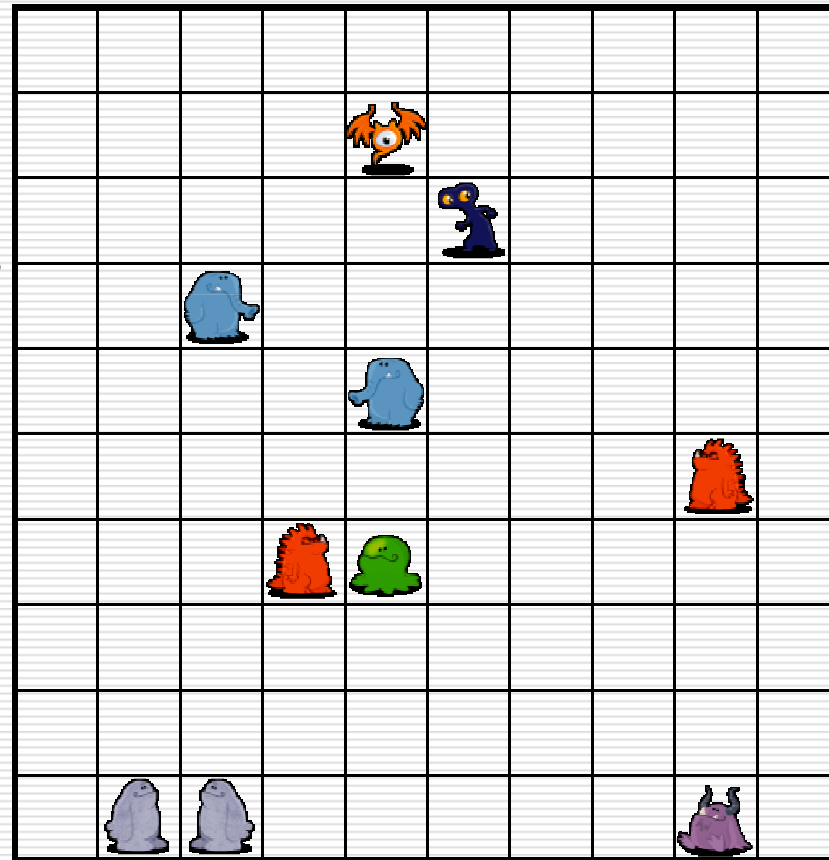
- ❑ To create creatures with living properties such as self-healing, reproduction, growth, etc.
 - ❑ To synthesis life to know more about it.
 - ❑ To represent the interactions between the different influencing factors of behavior in a strict language.
 - ❑ Many more...
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Zamin?

- An A-Life Model for
 - Cognitive studies on evolution of complex behaviors, decision making methods and living strategies.
 - Training of agents.
 - Living creatures simulations.
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Zamin Structure

- Two-D Lattice
 - Definable Size
 - Round / Flat
 - Different Elements
 - Energy & Matter Conversions
 - Different Creature Species
 - Definable Rules and Actions



Zamin Creatures

- Three Layers of Creatures
 - Simple Organisms
 - Animals
 - Agents
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Zamin Creatures

Simple Organisms

- Get materials from the world.
 - Reproduction.
 - Internal Energy Level, maintain to live.
 - Properties.
 - Age, Position, Type, Amount of different materials inside the body, a few more.
 - Samples:
 - Plants, Water Springs!
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Zamin Creatures

Animals

- Can sense the world.
 - Must Choose from a wide range of [definable] actions.
 - Move/Eat/Attack/Defend/Mate/Give Birth/Talk/Broad Cast/Transfer/...
 - Different reproduction mating and reproduction methods
 - Asexual, rape, consensual mating, ...
 - Must eat to get energy and live.
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Zamin Creatures

□ Agents

- Control the world.
 - Unlimited access to world resources and creatures.
 - Definable levels of access and security.
 - Six main agents + unlimited number of auxiliary ones.
 - Immortal, no need of energy.
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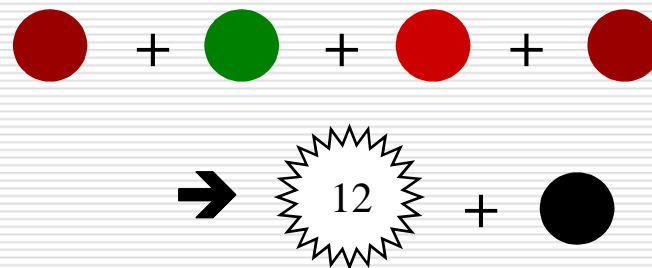
Zamin Creatures

□ Main Agents:

- Lord of Lives (Espand)
 - To produce creatures, control populations
 - Lord of Time (Zorwaan)
 - To turn time's wheel
 - Lord of Positions (Hormoz)
 - To create world positions matrix and move creatures inside it.
 - Lord of Resources (Kiyumars)
 - To produce matter and energy and manage their conversions.
 - Lord of Wills (Ashtaad)
 - To perform mortal creatures requested actions.
 - Lord of Gates (Mitra)
 - To show the world to mortal creatures.
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Zamin Energy And Element Management

- Infinite number of definable elements
- Infinite number of definable energy and matter conversion rules.



Experimental Results

□ Studying

- Evolution of Communication.
- Evolution of Pleasure System in simple creatures.
- The role of abstraction in learning.
- Evolution of Simple emotional states in simple creatures.

□ Training

- Speech Recognizer Agents.
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That's All

Thank You.
