reset timer

Selforganisational High Efficient Stable Chaos Patterns

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Content

Introduction

- Cellular automata → chaotic patterns.
- IoT systems as robots - e.g. Spiderino → swarm robots or robot-os.
- Orgiton theory → cybernetic elements of mass, energy, information units
- Informational simulation with process simulation software e.g. Witness.

GOAL

- Application for Spiderino.
- Simulation as “cellular automaton” or “orgiton” in Mathcad and Witness.

Theory I

Axiom 1. *Information flow is a translational information chain. - The "living" function can be interpreted as a continuous information flow.*

Axiom 2. *Increasingly nested translational patterns (autoencoder), increase potentially order and allow for increasingly safety or an integrity informational check.*

$$H_i = S_i = p_i \cdot ln(p_i) \qquad (1)$$

$$H(n) := log(n,2) \qquad (2)$$

Theory II

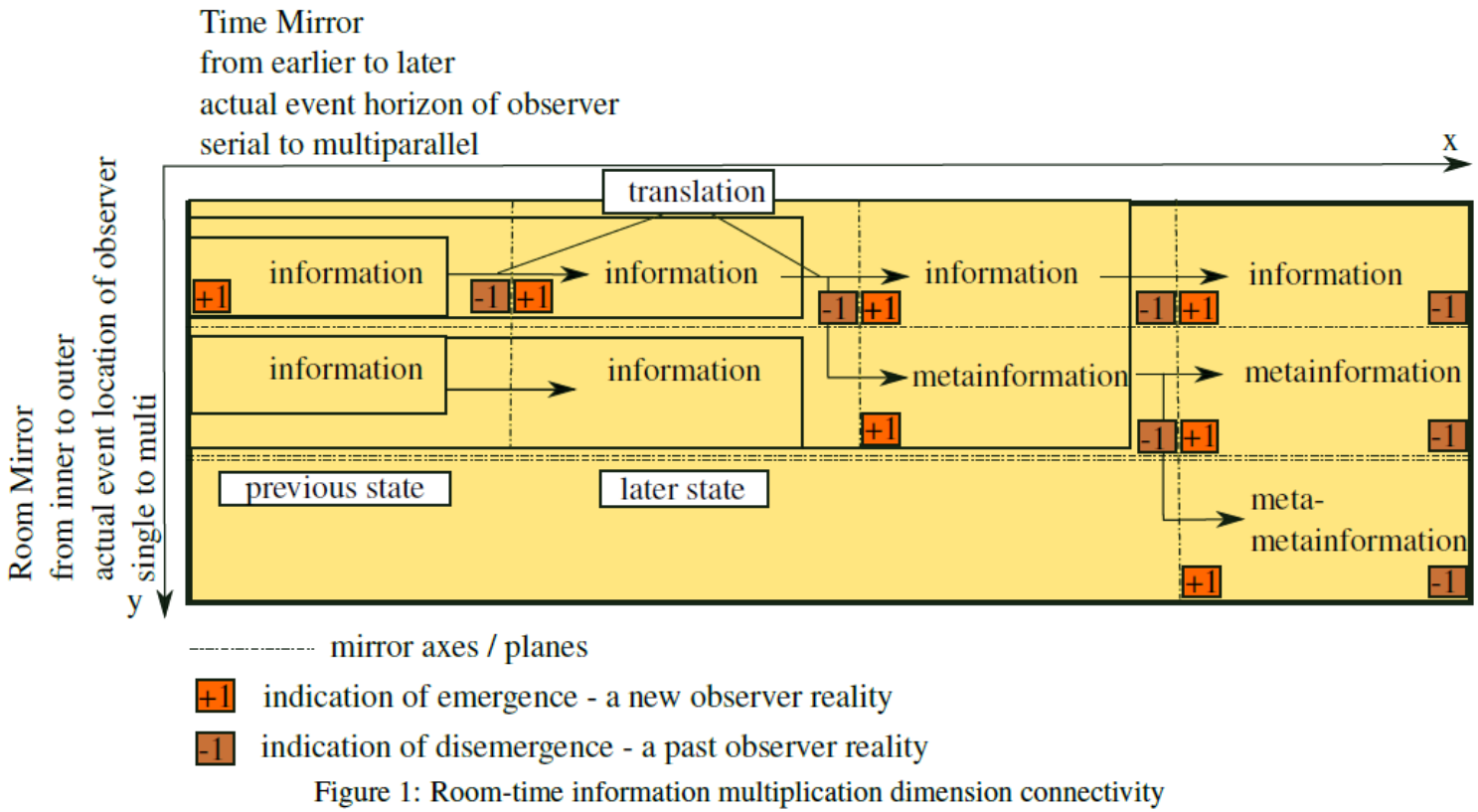

Figure 1: Room-time information multiplication dimension connectivity

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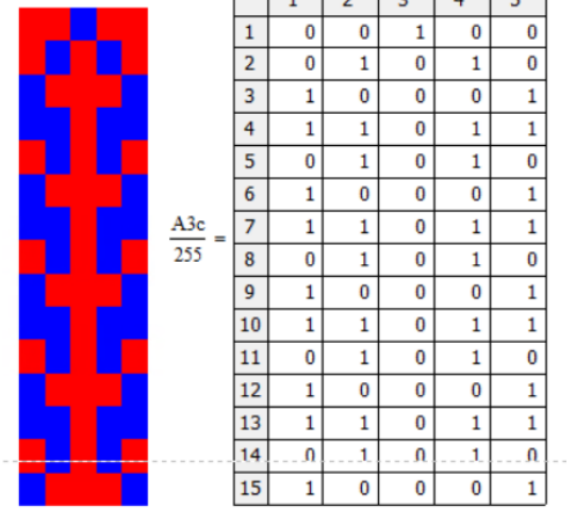
Mathcad I



	1	2	3	4	5
1	0	0	1	0	0
2	0	1	0	1	0
3	1	0	0	0	1
4	1	1	0	1	1
5	0	1	0	1	0
6	1	0	0	0	1
7	1	1	0	1	1
8	0	1	0	1	0
9	1	0	0	0	1
10	1	1	0	1	1
11	0	1	0	1	0
12	1	0	0	0	1
13	1	1	0	1	1
14	0	1	0	1	0
15	1	0	0	0	1

Figure 2: With A3xc(n=5,m=15) function (see APPENDIX - MATHCAD PROGRAMS) calculated cyclic pattern of five robot-os for 15 time steps (n=5, m=15); left the patternpicture and right the corresponding 0/1 representational matrix

Mathcad II

$\frac{A3}{255} =$

	1	2	3	4	5
1	0	0	1	0	0
2	0	1	0	1	0
3	0	0	0	0	0
4	0	0	0	0	0
5	0	0	0	0	0
6	0	0	0	0	0
7	0	0	0	0	0
8	0	0	0	0	0
9	0	0	0	0	0
10	0	0	0	0	0
11	0	0	0	0	0
12	0	0	0	0	0
13	0	0	0	0	0
14	0	0	0	0	0
15	0	0	0	0	0

A3

Figure 3: With A3x(n=5,m=15) function (see APPENDIX - MATHCAD PROGRAMS) calculated cyclic pattern of five robot-os for 15 time steps (n=5, m=15); left the patternpicture and right the corresponding 0/1 representational matrix - open-ended variant

Mathcad III

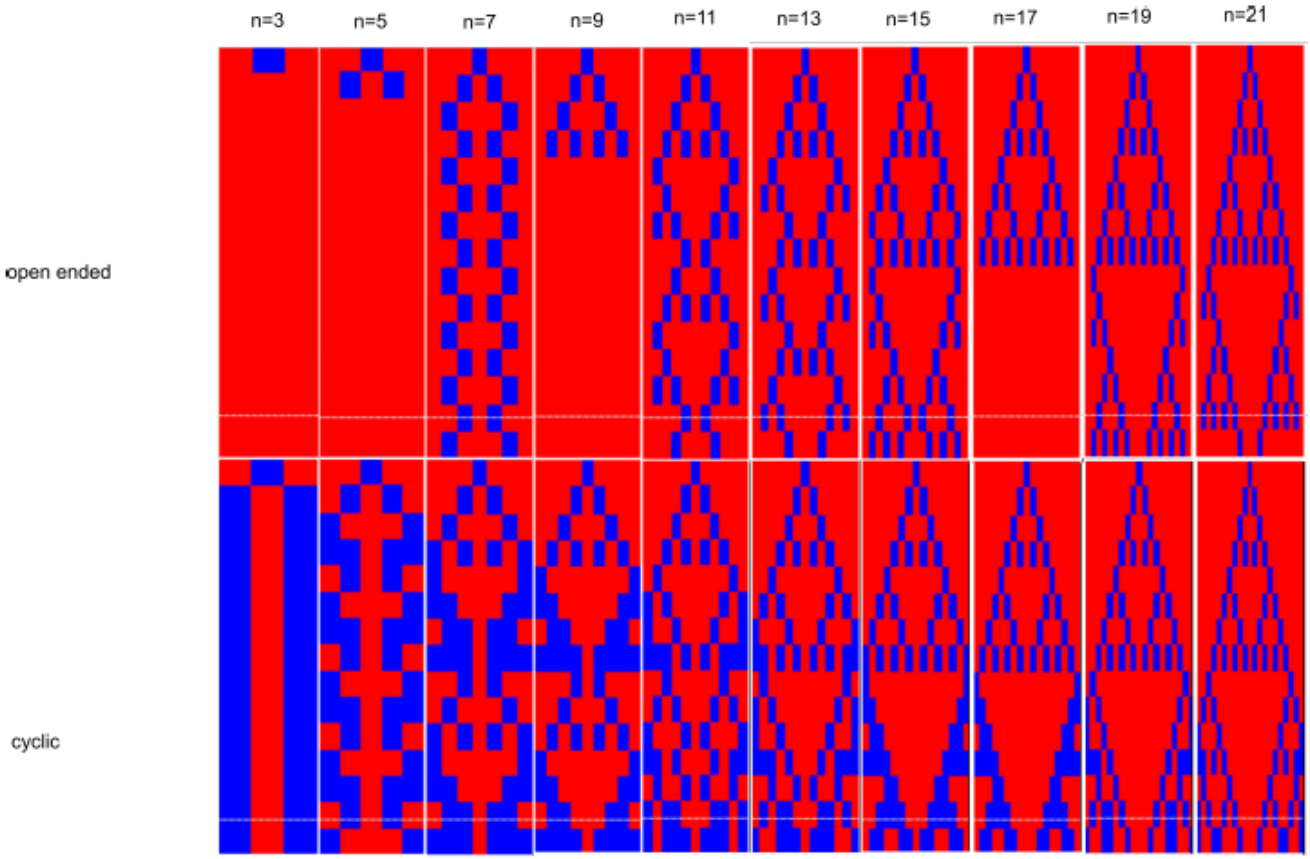


Figure 4: Ten (10) variants with the open-ended and the cyclic robot-os implementation

Witness I

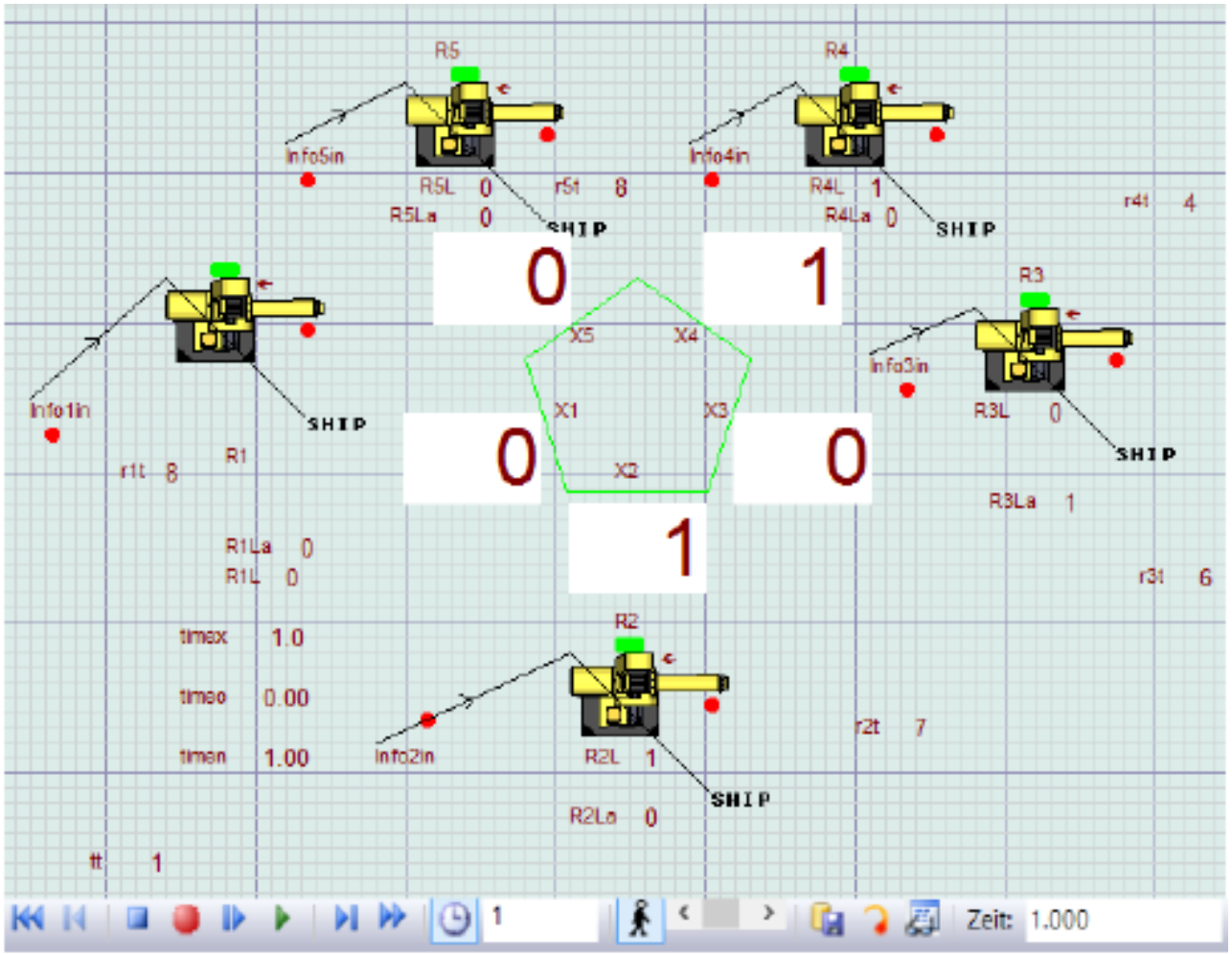


Figure 5: Triangularity pattern simulation in Witness with five robot-os

Witness II

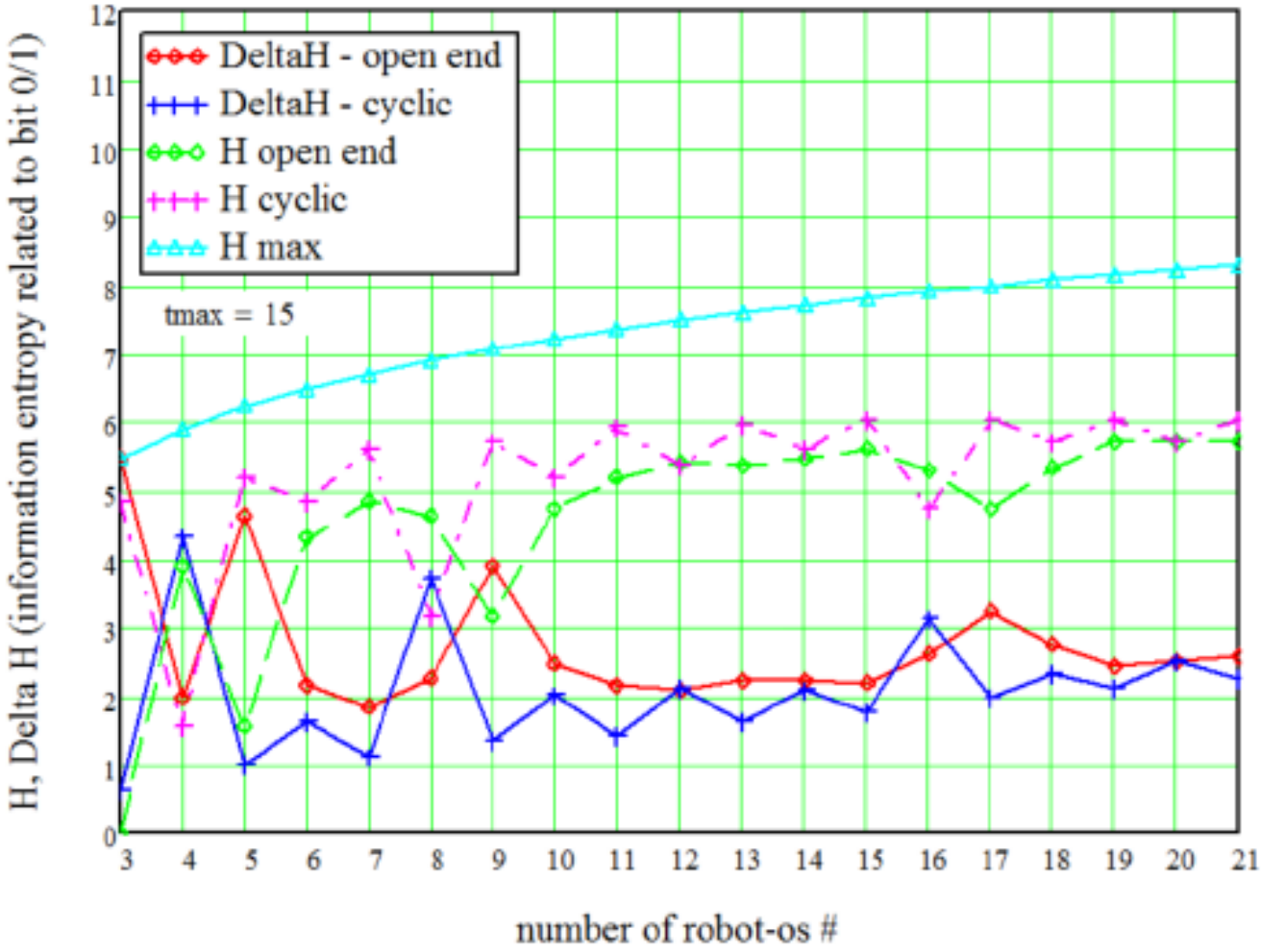


Figure 6: Information entropy

Conclusions and Outlook I

Summary and Conclusions:

- Concept/theory contribution for basic informational system modeling.
- Mathcad and Witness simulation models provided for "orgitonal" robot-os or cellular automata.
- Information entropy as measure for stable chaos patterns.

Outlook:

- IoT implementation of presented patterns in "spiderin-os".
- New patterns can be investigated with swarm robots or robot-os.

Thank you cordially for your attention!

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PS.: The presentation can later also be found at:

http://www.dr-heiden.com/Vortraege.htm

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