Discovering emerging Effects in Learning Networks

Discovering emerging Effects in Learning Networks with Simulations

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Agenda

1. Why using simulations for research in Learning Networks?
2. Appropriated simulation frameworks
3. Methodology approach for designing simulations
4. Research focus on simulations for LNs
5. Expectations \ Open questions

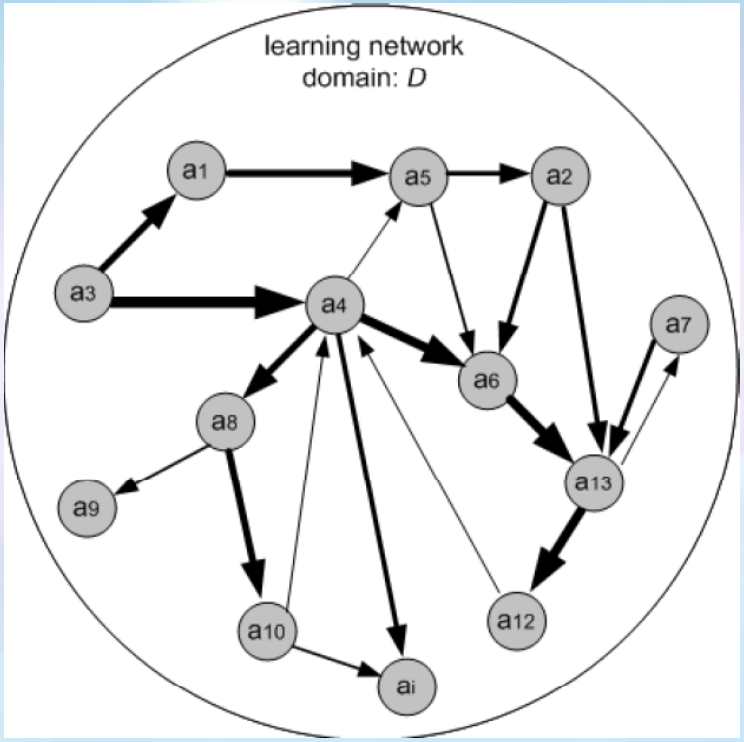
Emerging Effects

Example of an emerged effect

1. Why using simulations for research in Learning Networks?

- Emerging behavior of learners in LNs (Navigation support)

Why simulations:
- Limited availability of LNs
- Experiments are cost intensive and limited in time, amount of learners and UoLs

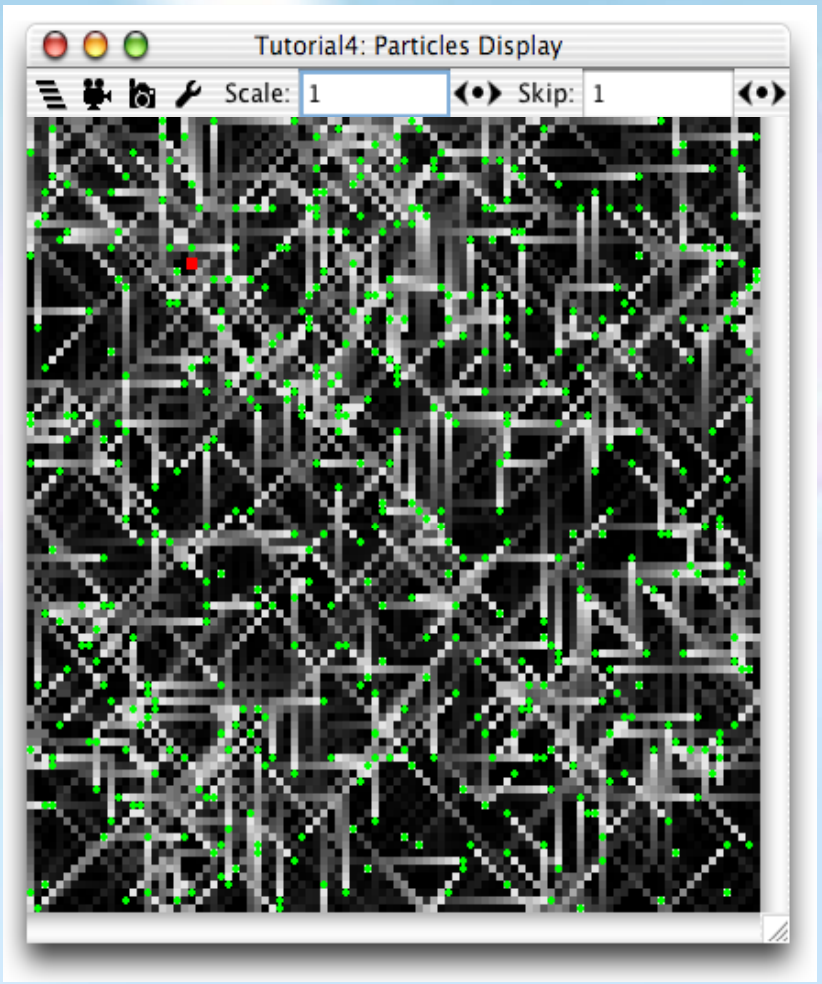


Especially research in emerging effects requires **long term perspectives** and **huge amount of learners.** [ISIS Example]

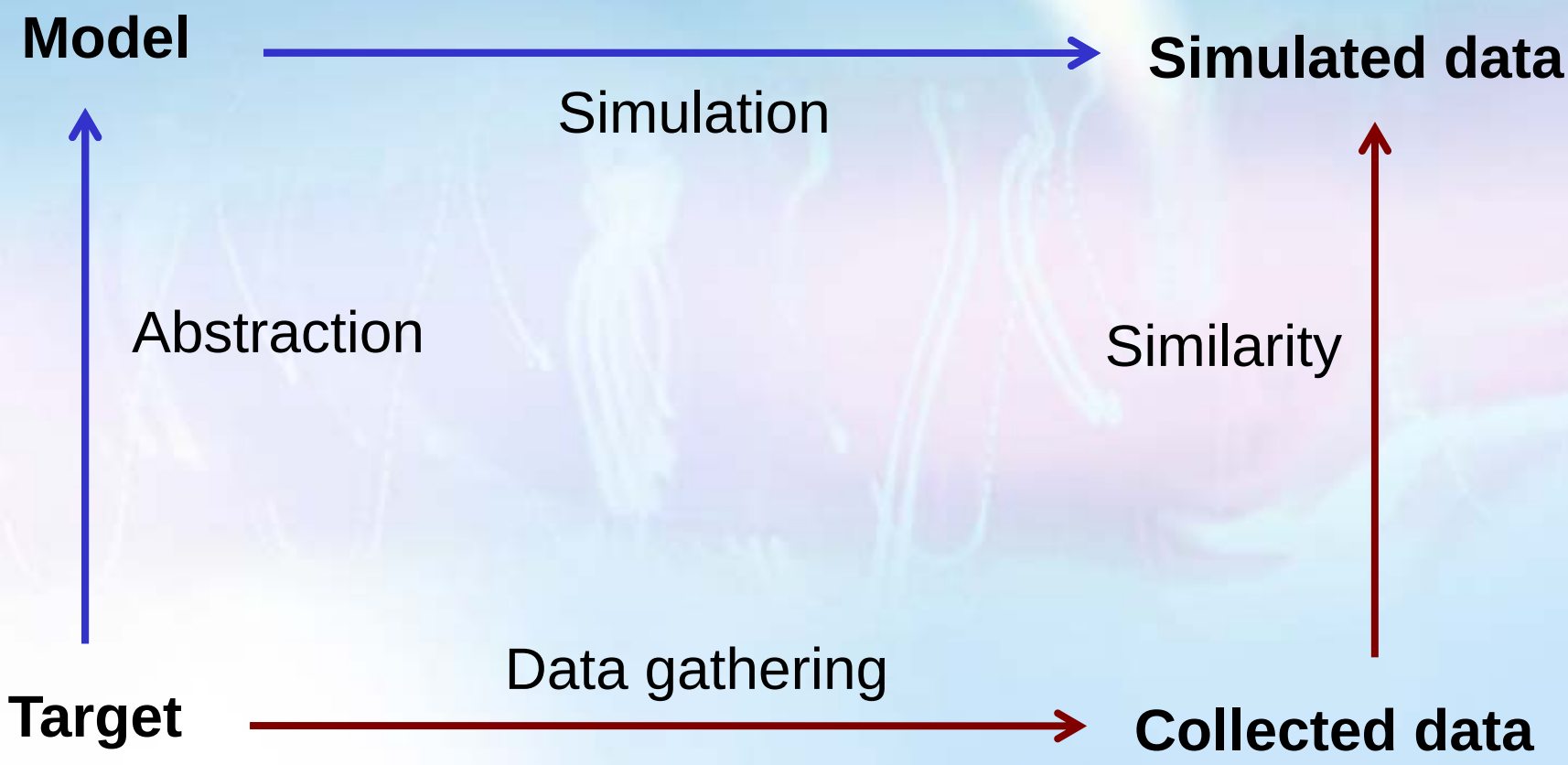
2. Appropriated simulation frameworks

- Highlevel platform (programmable application)
  - Netlogo
  - StarLogo
- Framework & library platform (construction frameworks)
  - MASON
  - Repast
  - Java Swarm

1. **RePast**
2. **MASON**
3. **scape**
4. **Swarm**
5. **TeamBots**
6. **Player/Stage**
7. **Breve**
8. **StarLogo**
9. **NetLogo**
10. **Processing**
11. **MadKit**
12. **Cormas**
13. **Magsy**
14. **Simpack**



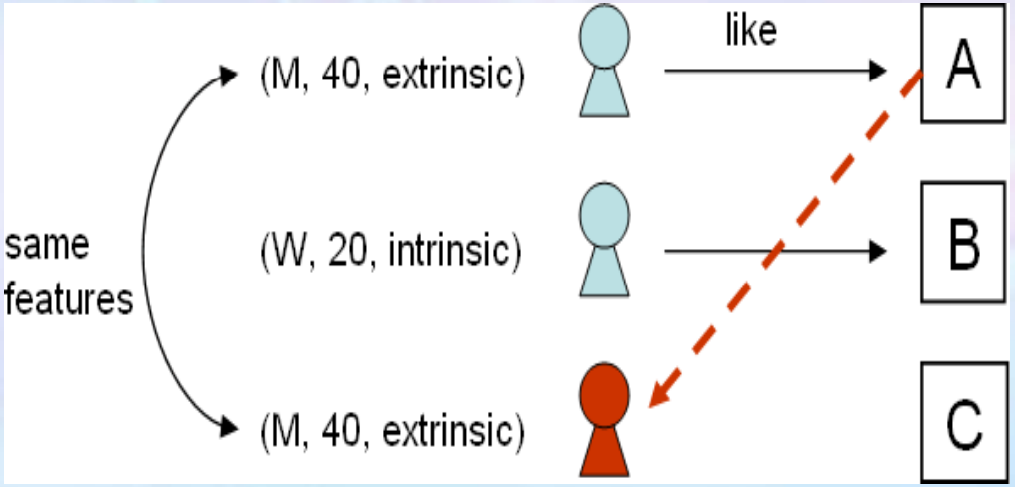
3. Methodology Approach for Simulations



4. Research focus on a LN simulation

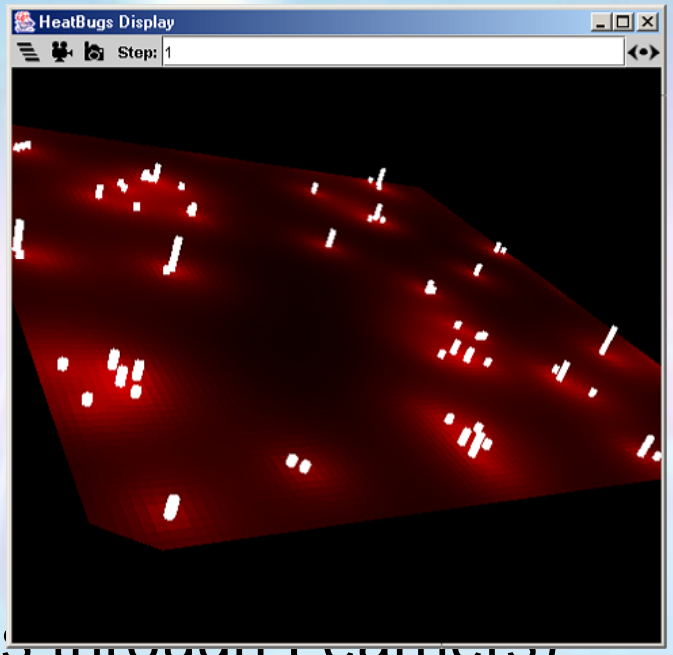
Exploration of different kinds of bottom-up recommendation algorithm on different sized LNs.

1. User-based filtering
2. Item-based filtering
3. Tag-based filtering



4. Research focus on a LN simulation

Measuring performance of three algorithms in three different sized LNs on :



Classic Learning Theory Measures:

- Goal attainment
- Time to reach goal
- Dropout rate

Social Network Aspects:

- Connectivity (Exploration of the LNs through Learners)
- Centrality (importance of a Learner, count of the number of ties)
- Closeness (sum of the shortest distances learners)
- Variety of paths

Expectations \ Open Questions

Expectations:

- Conditions of LNs in which specific algorithms perform better than others.
- An Evaluation approach for the combination of SNA techniques with *Learning Theory Measures*

Open Questions:

- How can we observe / and measure what emerges?
- What kind of statistical analysis is needed?
- How to combine SNA measures with classic learning research?
- How to integrated user tagging into a simulation?

References:

Journals for Simulation Research:

- *Journal of Artificial Societies and Social Simulation (JASSS)*
- *Journal of Complexity International*
- Journal *Artificial Life*

Mailing lists / Newsletter:

- http://www.comdig.org/
- http://ec-digest.research.ucf.edu
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