

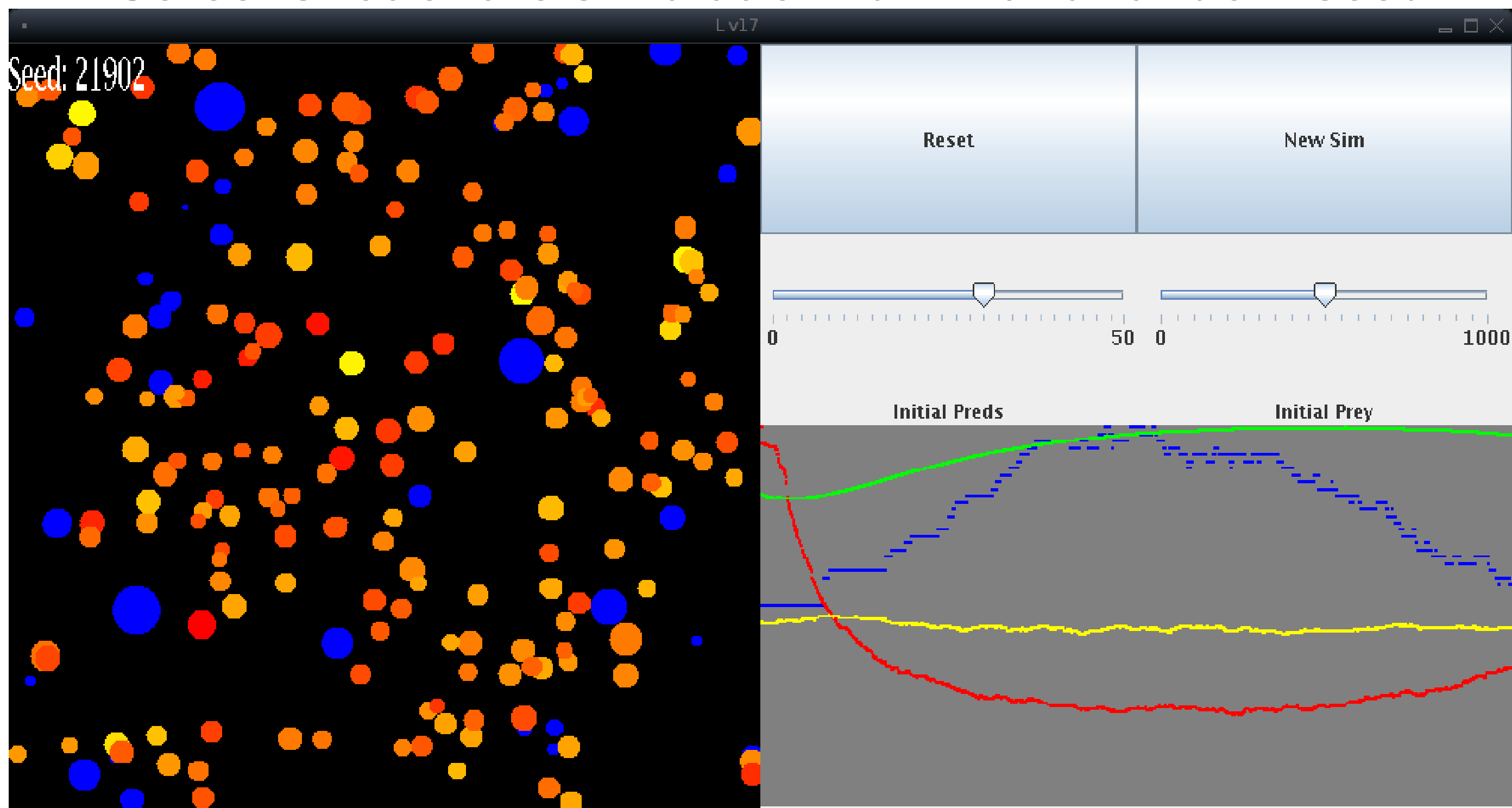
Artificial Intelligence in a Multi-Agent Model

John Walsh
Computer Systems Research Lab 2008-2009

Abstract

Agent-based modeling is an extremely diverse field of research, and much analysis and research into the effectiveness of agent-based modeling. Agent-based modeling is valued for its ability to model scenarios in a level of detail that would be prohibitively complicated in an equation based model. I will investigate the possible value of detailing agent behavior beyond simple rules, to the level of basic artificial intelligence for each agent.

Screenshot of the simulation run with a random seed



Goal

- Deeper understanding of multi-agent modeling.
- Simple predator-prey interaction
- Advanced decision-making mechanisms
- Different results depending on the level of intelligence
- Compared to see the effect of the AI

Problems

- Simulation is not grid-based, making agent interaction very computationally intensive
- Surprisingly difficult to create a stable scenario

Results

I have been successful creating a representation of an equation-based model. One can clearly see that the population is stable over time.

