Rabbits Grass Simulation Exercise

Intelligent Agents Course

Fall 2019

Agent-based Simulations

- Important research area in agent technology: needs for simulating populations of autonomous interacting entities
- Example of Application areas:
  - Biology: viruses, evolution, multi-cellular tumors
  - Economics: consumer markets
  - Social Science: individual vs global behaviors, conflict research
  - Chemistry & Physics, Earth Science and Mathematics

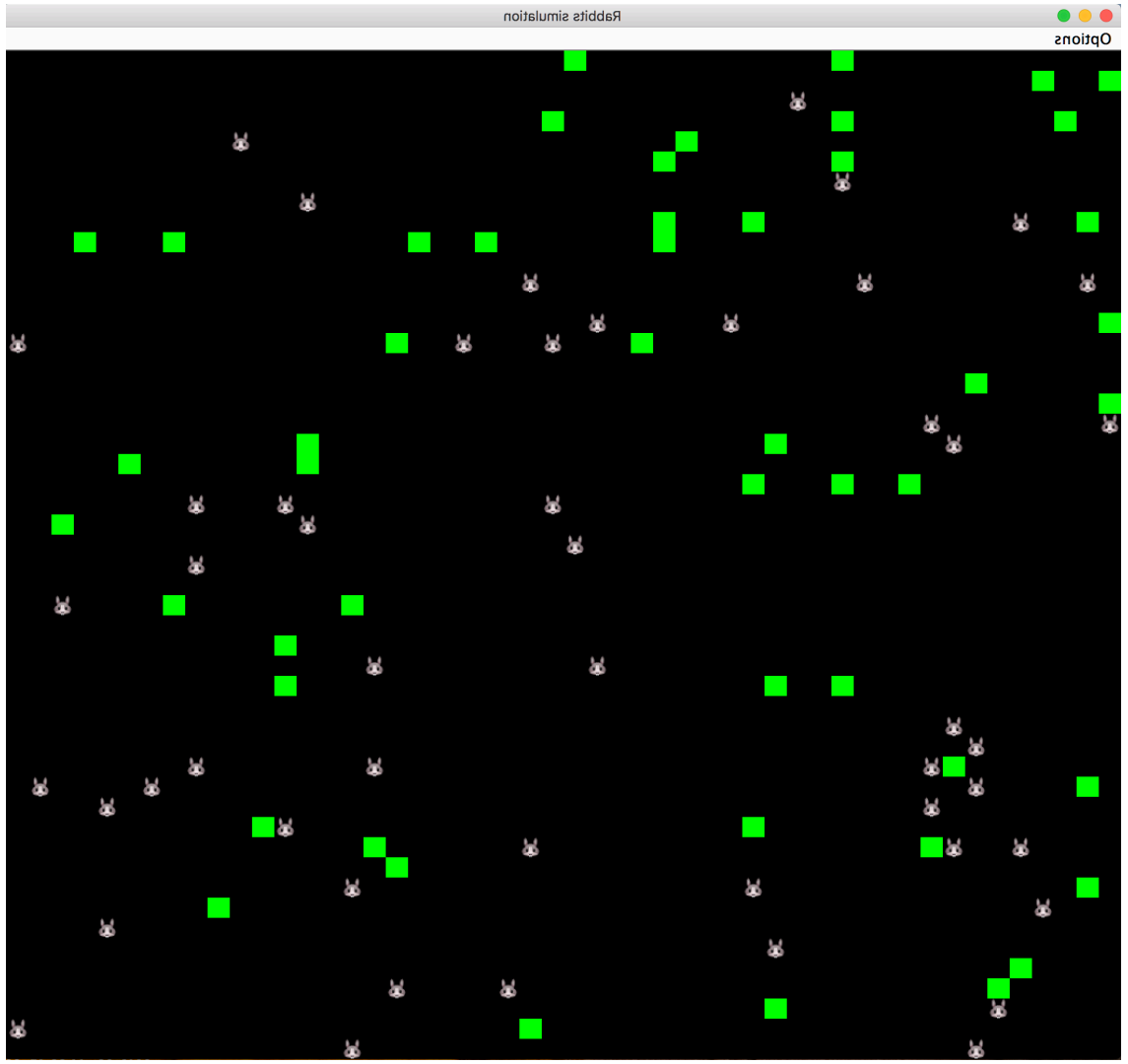
What is RePast?

- Open-source Java Toolkit for programming simulations
- University of Chicago
- Especially suited for modeling complex systems developing over time
- repast.sourceforge.net

- A RePast Tutorial: John T. Murphy, University of Arizona & Arizona State University: http://liapc3.epfl.ch/repast/main.htm

A First Application in RePast

- A Rabbits Grass Simulation
- Goal: understand RePast
- Realize something similar to this:



Our Constraints

- Grid: 20x20 matrix (default), **torus**
- Initial rabbits & grasses are created at **random** places
- Legal moves: **NSEW randomly**
- **Collisions**: different rabbits can not stay on the same cell
- Eat condition: occupy the same cell
- Grasses **grow** at a certain rate
- Rabbits **reproduce** after reaching a certain energy level

Deliverable

- Deadline
  Tuesday, 01.10.2019 – 11.55PM

- Report
- lastname1-lastname2-in.pdf
- Description of your code + short discussion of population evolution
- maximum 3 pages, use provided template

- Source, compiled code, runnable jar and short report
  - lastname1-lastname2-in.zip