

Introduction to Agent Simulation with RePast Symphony

Dr Nan Zhang

zhangn2019@mail.sustech.edu.cn

Our Course Website

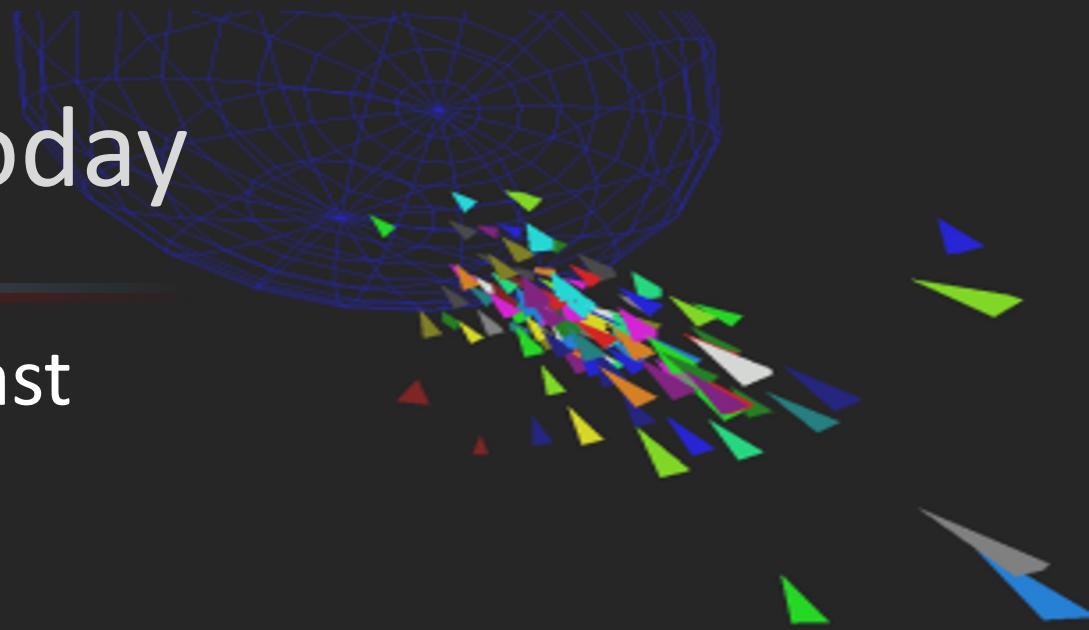
- SUSTech Blackboard: bb.sustech.edu.cn

The screenshot displays the SUSTech Blackboard interface. At the top, the header includes the SUSTech Blackboard logo, the user name '计算机科学与工程系 张楠(Nan ZHANG)', and navigation links for '首页', '课程', '帮助页面', 'Blackboard平台帮助课程', and 'Blackboard Help'. The course title 'Advanced Multi Agent Systems Spring 2024' is prominently displayed, along with a 'Course Info' link and an 'Edit Mode' toggle set to 'ON'. The left sidebar contains a navigation menu with sections: 'About the course' (including Announcements and Course Info), 'Course Materials' (including Supplementary Materials and Week 1), and 'Feedback & Get Help' (including Assignments, Discussion, Groups, My Grades, and Get Help). The main content area is titled '--Course Info' and features two expandable sections: 'Contact Info' and 'Syllabus & Course Schedule'. The 'Contact Info' section lists the instructor, Georgios, and teaching assistants, Nan Zhang and Christian Vergara. The 'Syllabus & Course Schedule' section provides basic information, including the course title 'CSE5022 Advanced Multi-Agent Systems', the academic department 'Dept. of Computer Science and Engineering', and the language of instruction 'English'. A table at the bottom details the lecture schedule.

	Time	Location
Lecture	Wed 2:00-3:50 pm	三教304 (Lecture Hall 3, Room 304)

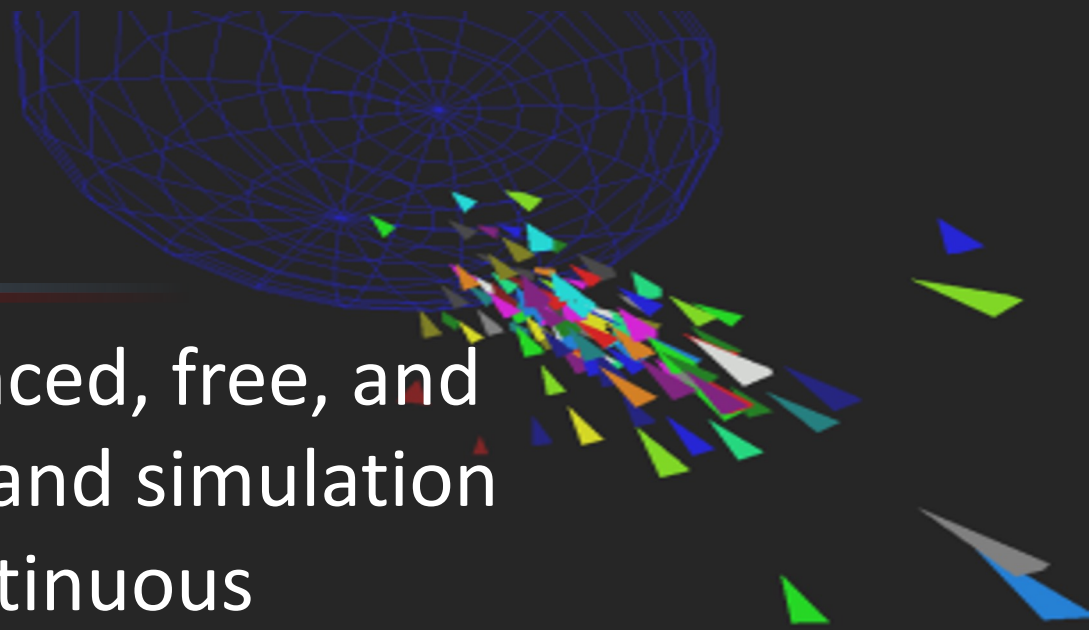
Objectives Today

- Setting up the environment for Repast
- Familiarize with Repast
- Run an example model

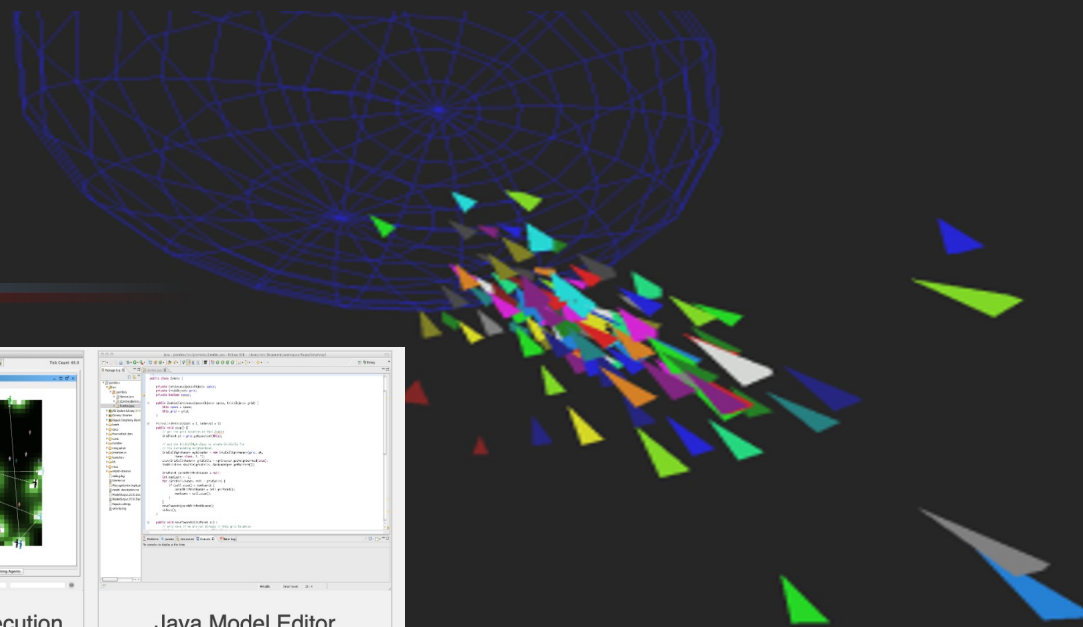




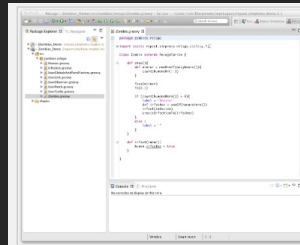
Repast



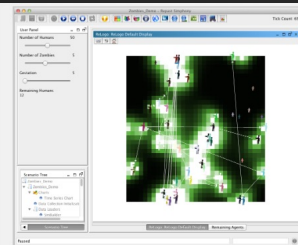
- The Repast Suite is a family of advanced, free, and open source agent-based modeling and simulation platforms that have been under continuous development for over 20 years
 - **Repast Symphony 2.10.0**, released on 22 December 2022, is a richly interactive and easy to learn Java-based modeling toolkit that is designed for use on workstations and small computing clusters.



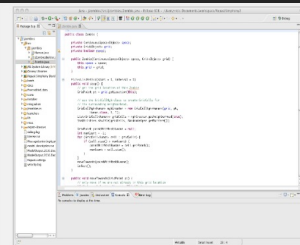
- Some screenshots



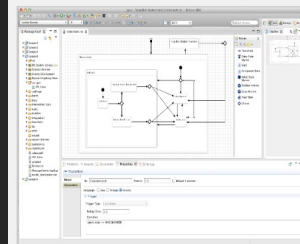
ReLogo Model Editor



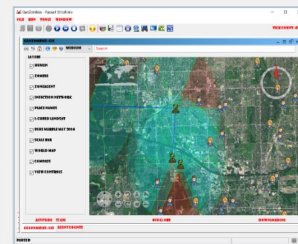
ReLogo Model Execution



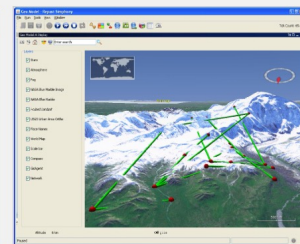
Java Model Editor



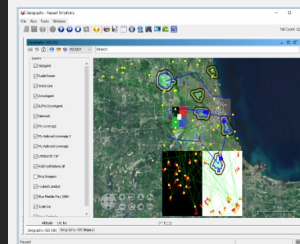
Statechart Editor



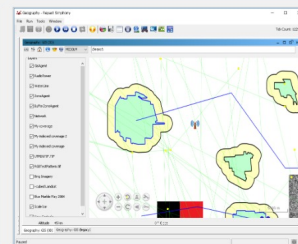
GIS Model Visualization



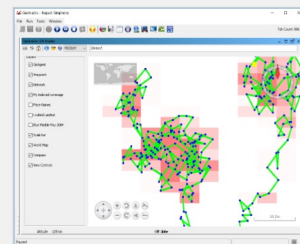
GIS Model Visualization



GIS Model Visualization



GIS Model Visualization



GIS Agent Tracking

Repast Installation and Running

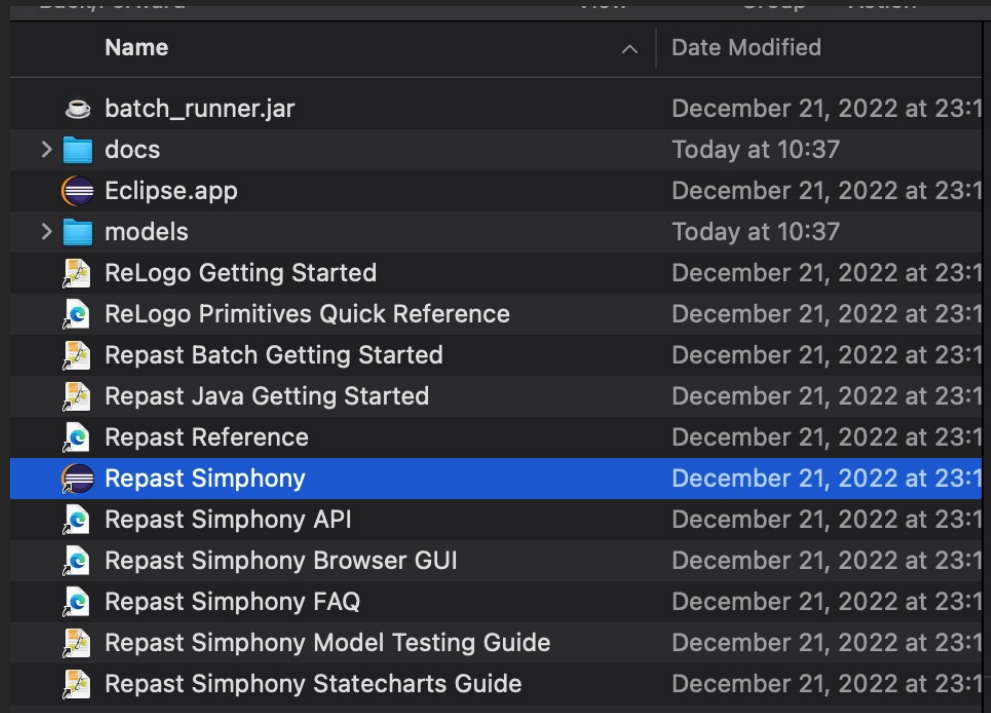


- Step 1: Download and install Repast Symphony
 - <https://repast.github.io/download.html>
 - Repast Symphony requires the use of Java 8 or later.

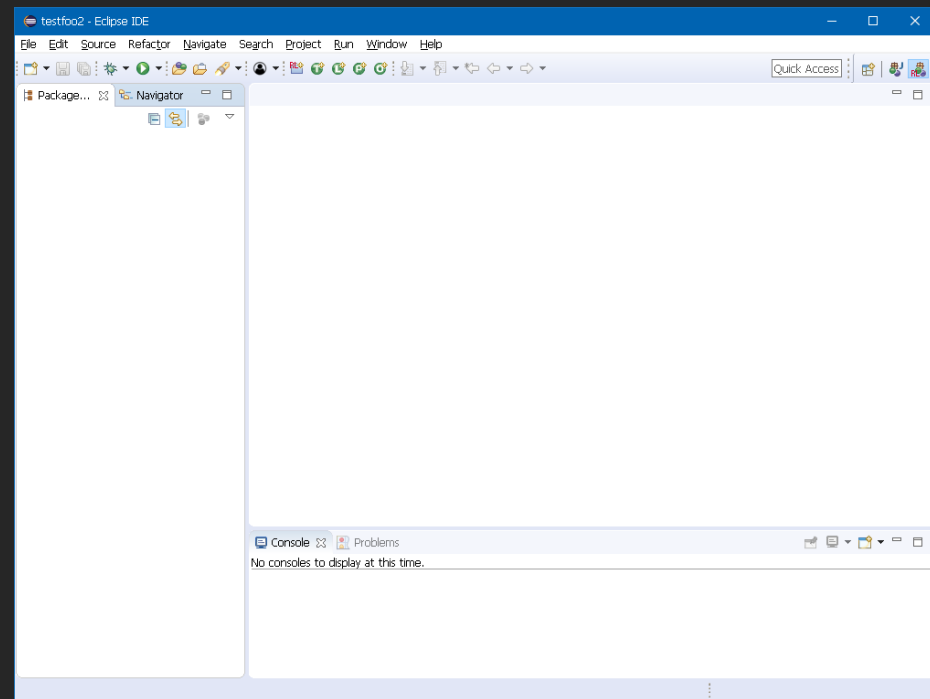
Windows	Windows Installer	Run the executable installer file and follow the installation wizard's prompts. Using the default installation settings is recommended for most users.
macOS (Intel Processors)	macOS Disk Image (x86_64)	Double click on the dmg file and follow the installation instructions that appear.
macOS (Apple Silicon)	macOS Disk Image (aarch64)	Double click on the dmg file and follow the installation instructions that appear.
Linux	Update Site Install	Follow the instructions for installing the Repast Symphony update site for Eclipse.
Repast Model Library	Model Archive	The model archive is bundled with the installers but may be downloaded separately. See the the Repast Symphony quick start guide for help on importing the demo models.

Repast Installation and Running

- Step 2: Run and Configure Repast
 - After Repast is installed, run the "Repast Symphony" shortcut

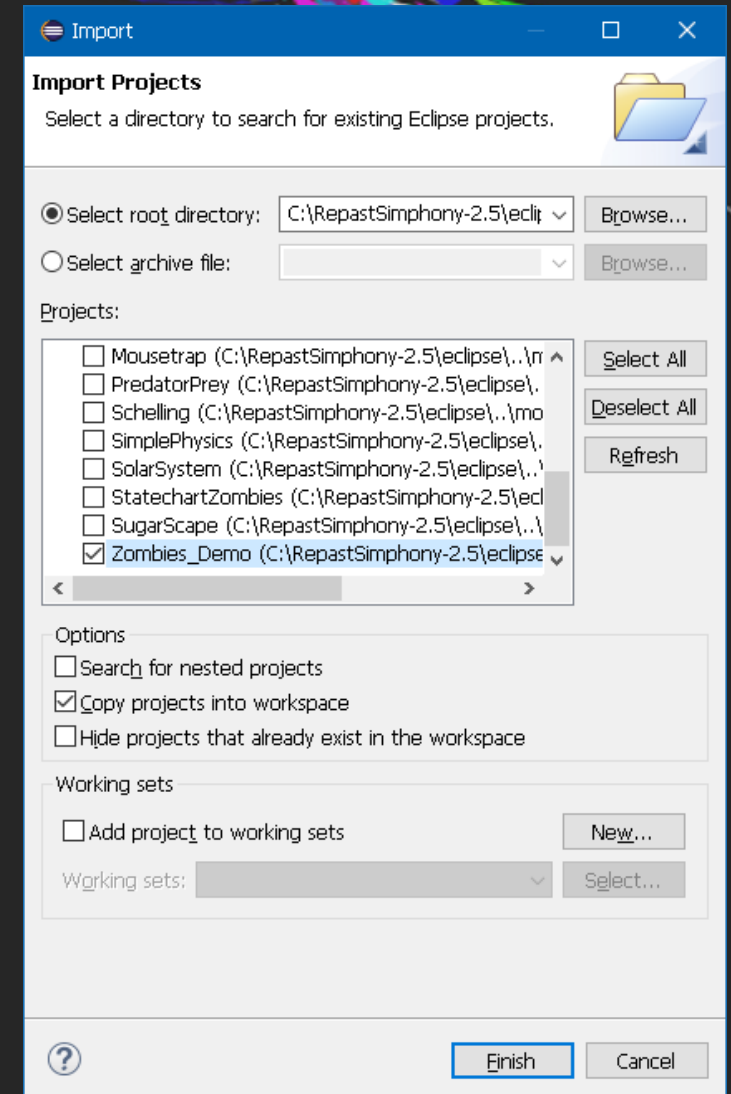


Name	Date Modified
batch_runner.jar	December 21, 2022 at 23:1
> docs	Today at 10:37
Eclipse.app	December 21, 2022 at 23:1
> models	Today at 10:37
ReLogo Getting Started	December 21, 2022 at 23:1
ReLogo Primitives Quick Reference	December 21, 2022 at 23:1
Repast Batch Getting Started	December 21, 2022 at 23:1
Repast Java Getting Started	December 21, 2022 at 23:1
Repast Reference	December 21, 2022 at 23:1
Repast Symphony	December 21, 2022 at 23:1
Repast Symphony API	December 21, 2022 at 23:1
Repast Symphony Browser GUI	December 21, 2022 at 23:1
Repast Symphony FAQ	December 21, 2022 at 23:1
Repast Symphony Model Testing Guide	December 21, 2022 at 23:1
Repast Symphony Statecharts Guide	December 21, 2022 at 23:1



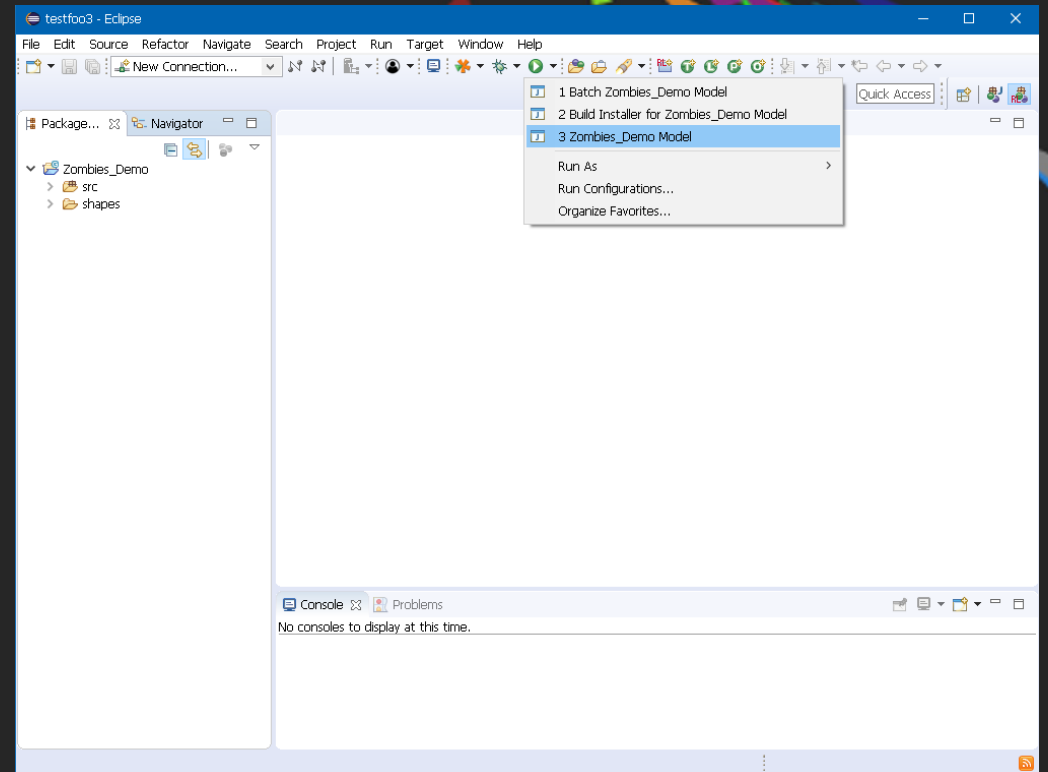
Repast Installation and Running

- Step 2: Run and Configure Repast
 - From the window menu, select File -> Import Repast Examples.
 - Select the "Zombies_Demo" at the bottom of the list of available models and click the Finish button.



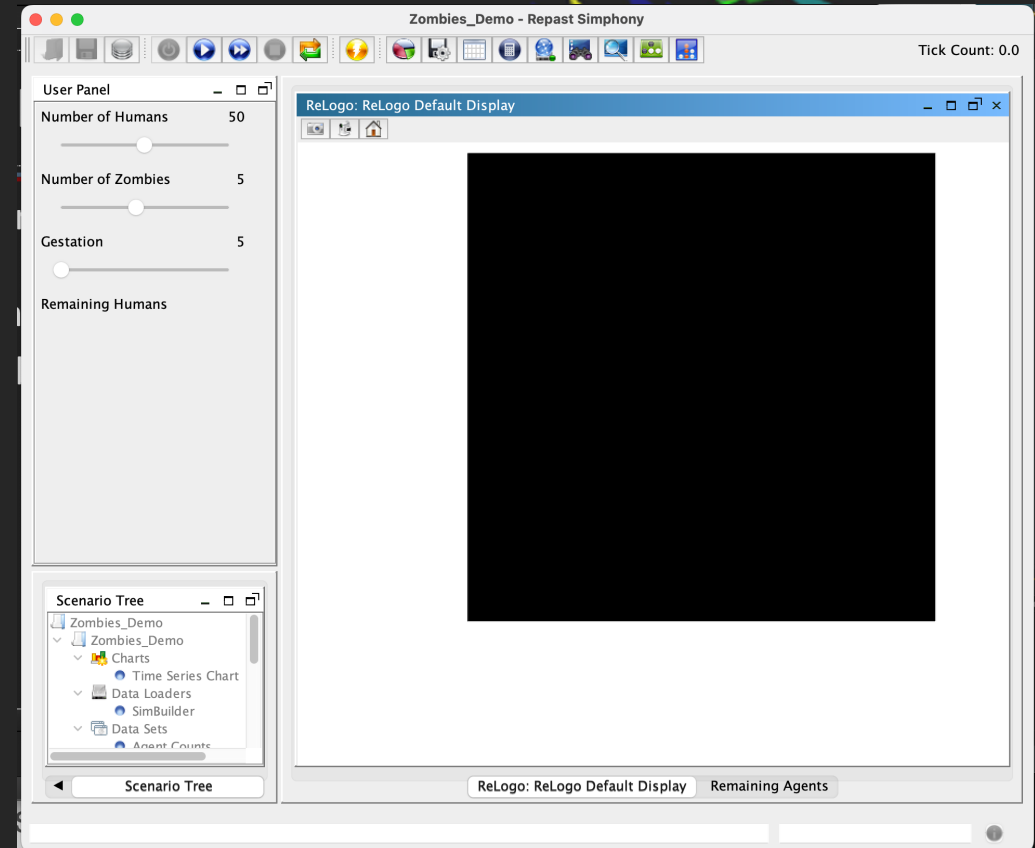
Repast Installation and Running

- Step 2: Run and Configure Repast
 - Run the ReLogo zombies demo model
 - Click the black Run selection icon next to the Run button and select "Zombies_Demo Model"



Repast Installation and Running

- Step 2: Run and Configure Repast
 - Click the Initialize Run button to initialize the model. A number of slider buttons will appear in the User Panel from which model parameters can be adjusted



Repast Installation and Running

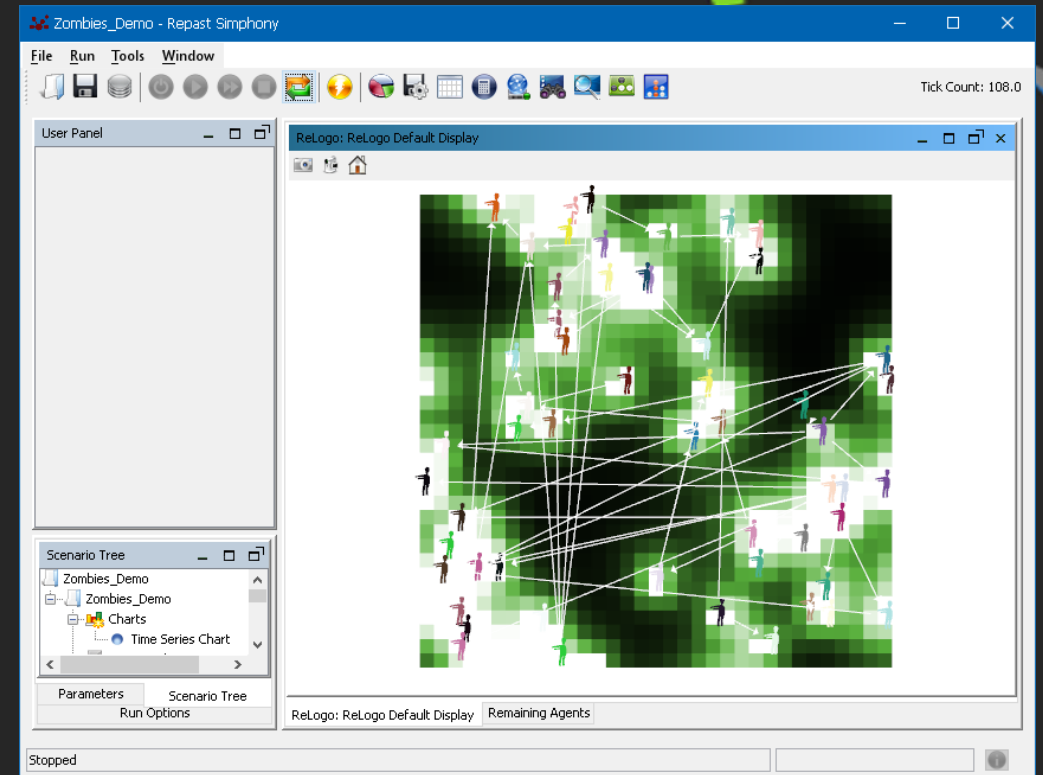
- Step 2: Run and Configure Repast



- Click the model Play button

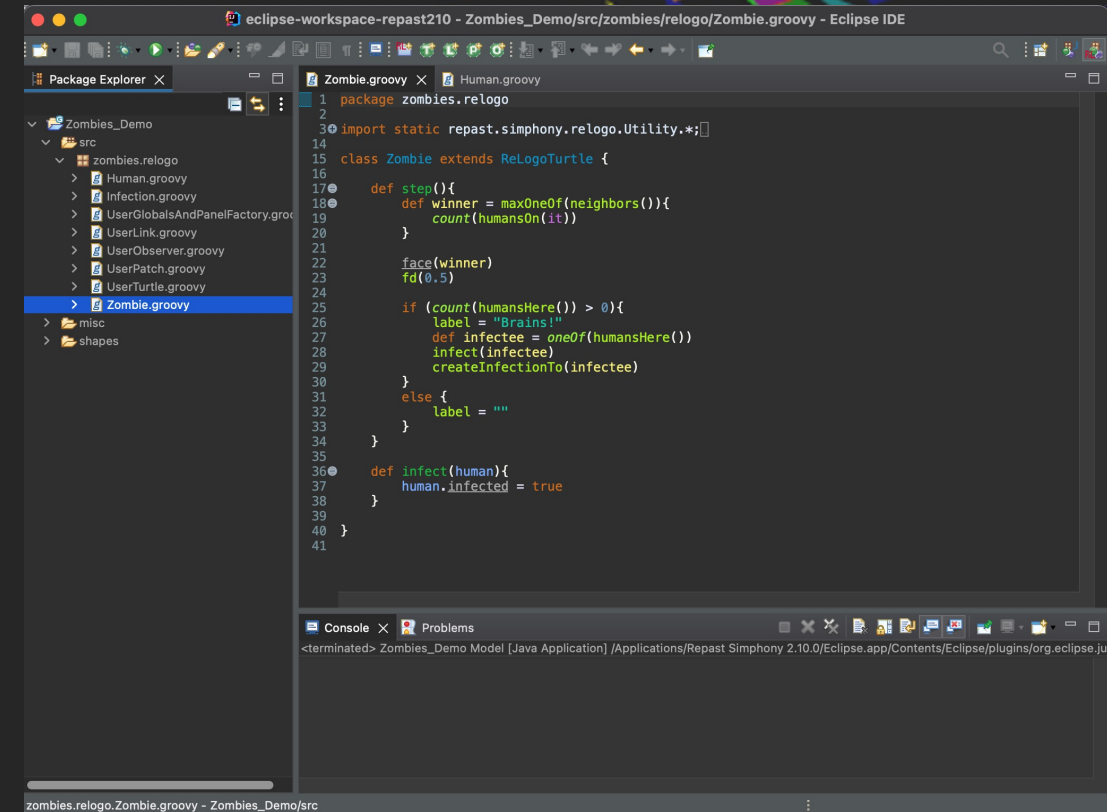


- Once the simulation finished, click the reset run button to restart the simulation



Repast Installation and Running

- Step 3: Check the source code
 - This example uses ReLogo, an agent-based modeling (ABM) domain specific language (DSL)
 - We will use Java.



Reference Manual

A decorative graphic in the top right corner featuring a blue wireframe sphere. From the base of the sphere, a cluster of small, colorful triangles (in shades of green, blue, yellow, and red) appears to be falling or exploding outwards. A few more triangles are scattered further to the right.

- Quick start:
 - https://repast.github.io/quick_start.html
- FAQ:
 - <https://repast.github.io/docs/RepastFAQ/RepastFAQ.html>
- JAVA tutorial:
 - <https://repast.github.io/docs/RepastReference/RepastReference.html>