

COSC150: Scientific Investigations Using Computation
A Gallery of N-Body Models
Fall 2023

IN CLASS:

1. **GalaxSee**: Movement caused by sum of pair-wise FORCES

Javascript (right-click(PC) or cntl-click (mac) to open in new tab):
<http://shodor.org/~aweeden/galaxseeJS/>

2. **SimSurface**: Configuration evolves to minimize total system ENERGY

Javascript (right-click(PC) or cntl-click (mac) to open in new tab):
<http://shodor.org/~aweeden/simsurfaceJS/>

3. **Game of Life**: Configuration evolves in response to ENVIRONMENT.

EXCEL: <http://shodor.org/talks/ncsi/excel/GameOfLife2a.xls>

ASSIGNMENT 6: Due before class 31 October 2023

For each of the following, write a brief story that explains how the system evolves. First, *identify the parameters for each model*. Explore the parameter space for each model (size of the model, probabilities, durations, time step, etc). What are the Nouns, Adjectives, Verbs, Adverbs.

Using the *Expectation, Observation, Reflection* framework, write 1-2 paragraphs per model about what have you learned about each system by running it under different conditions and parameters. Use screen shots and report specific parameters to support your conclusions.

Models in Interactivate (right-click(PC) or cntl-click (mac) to open in new tab):

<http://www.shodor.org/interactivate/activities/LifeLite/>

<http://www.shodor.org/interactivate/activities/Fire/>

<http://www.shodor.org/interactivate/activities/RabbitsAndWolves/>

(Include: for what combination of parameters can you keep *all three species* in co-existence the longest?)

<http://www.shodor.org/interactivate/activities/SpreadOfDisease/>

(Include: what is effect of loss of immunity?)

Submit PDF of your write-up by class on Tuesday 31 October 2023.