Quiz 3

Complexity Science
Fall 2017

This quiz is open book, open notes, open Internet. For coding questions, you can write a draft on paper; you don’t have to get it working.

When you are done with the quiz, hang onto it. We’ll go over it together.

1. “Vote for Life” is a family of GoL variants where the state of each cell during the next time step depends on the sum of its 8 neighbors and itself. “Fredkin” is a “Vote for Life” rule where each cell is alive during the next time step only if the total is 1, 3, 5, 7, or 9.

Write a function called step that takes a NumPy array of integers, computes a step of Fredkin’s rule, and returns a new array.
For the following questions, explain in a few clear, concise sentences that would make sense to another student in the class.

2. Give an example (other than the ones in the book) of a claim about the world that is likely to be true, but is falsifiable. Give another example (also not in the book) of a claim about the world that is not falsifiable.

3. What claim about the world is Laplace’s Demon meant to support? If this claim is true, what would the Demon be able to do?