Cellular automata

CA are a modelling technique, consisting of cells that interact and initialize and grow and shrink and propagate. All their interactions are local, yet global behavior emerges, almost as if we are looking at a scan of the brain. Very close, actually, very very close. So close that an interesting hypothesis imposes itself.   
  
Cellular automata can be trained to recognize patterns, make accurate predictions, and potentially serve as a form of artificial intelligence (AI). A hypothesis I researched in debt in my thesis and will explain in the following 8 minutes.

So, first things first: CA, more specifically NUECA. CA means a grid with local interections that evolves over timesteps following specific rules. ECA means that the grid has but one dimension, the local interactions are limited to the direct neighbors and the states of each cell are limited to 0 and 1. NUECA means that not every cell follows the same rule.

An example: we initialize a grid of size 25 and give a random input, resulting in some cells showing 0 and others showing 1. Now we decide which cell follows which rule, indicated by numbers. Looking at cell 17 we see a neighborhood of 110 and rule 205. Rule 205 dictates that neighborhood 110 results in state 0, this in the following timestep cell 17 will have state 0.