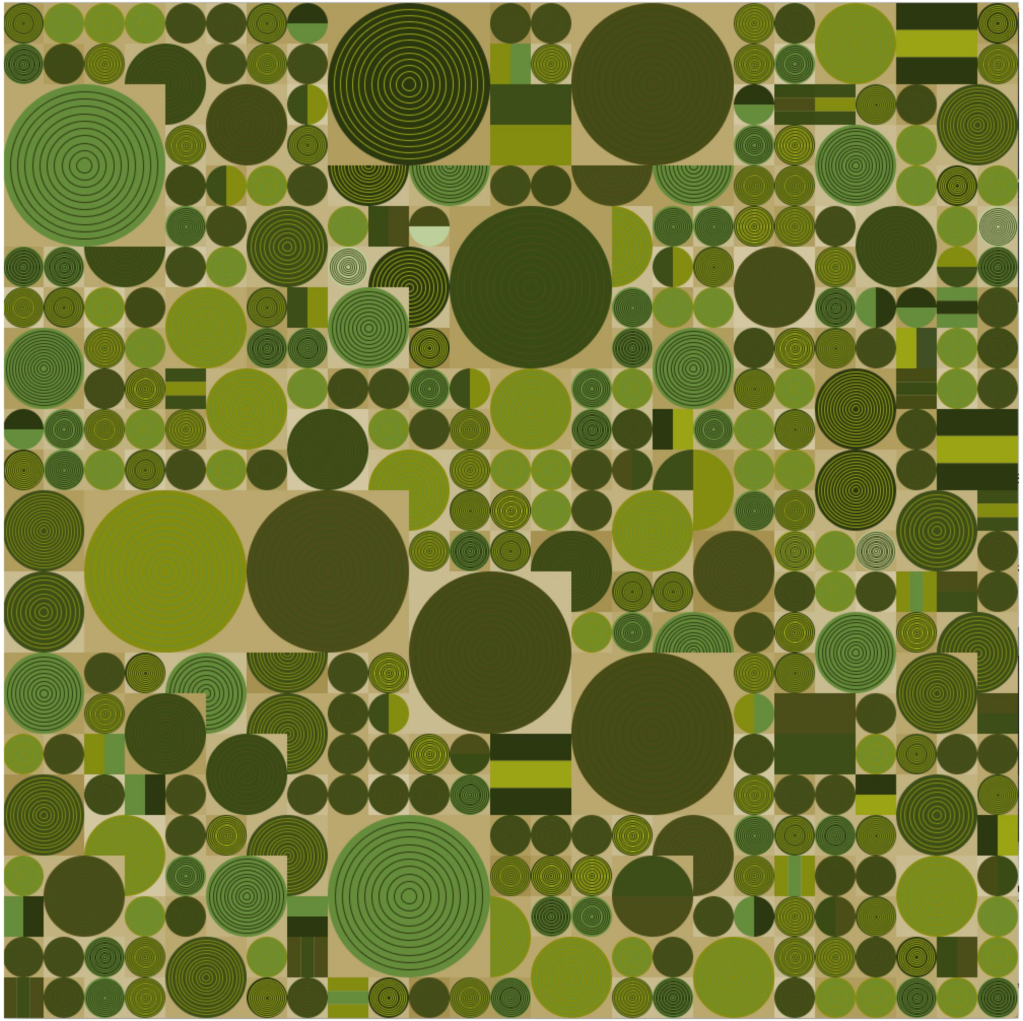
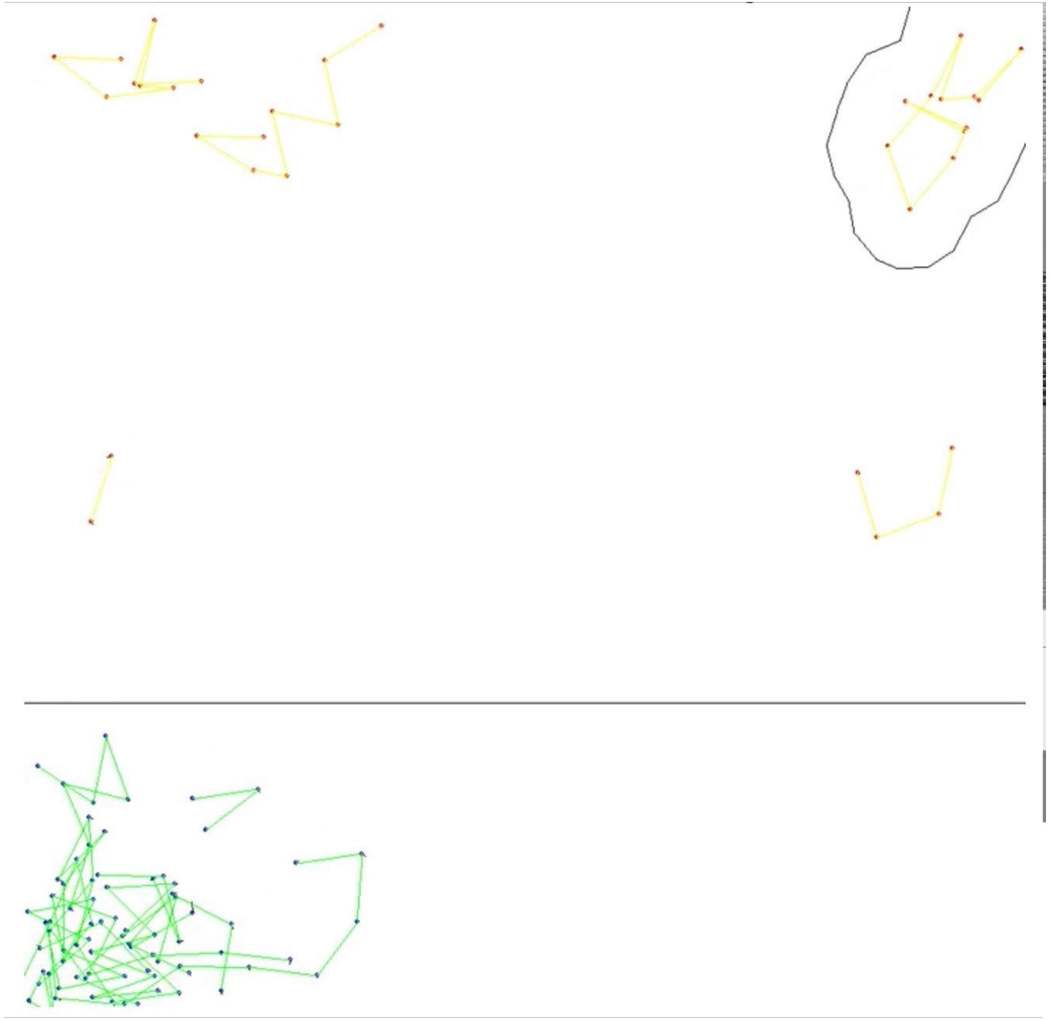
Creative Tech 3
Spring 2020

Martin Bernard

previous project

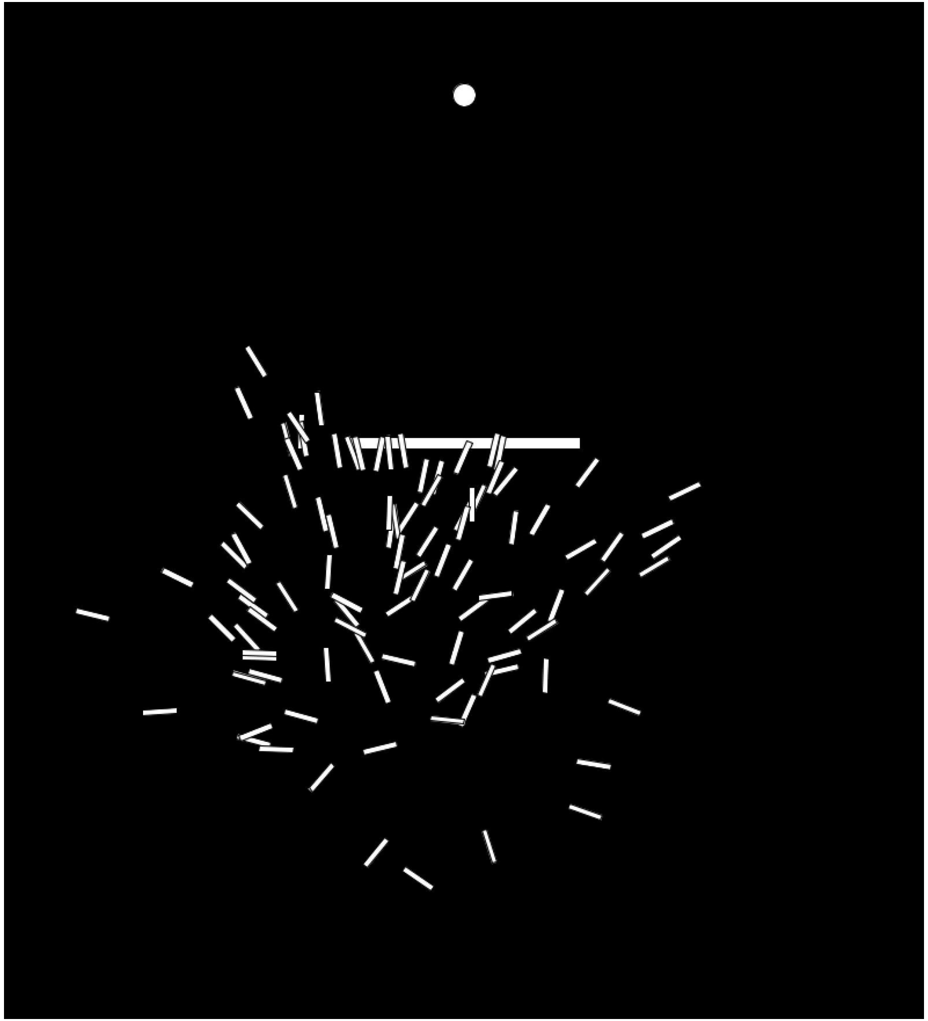




Preliminary Explorations

1. Evolutionary Algorithm
2. Cellular Automata
    1. Randomly cycled rules
    2. Game of life

Code modified from Daniel Shiffman examples

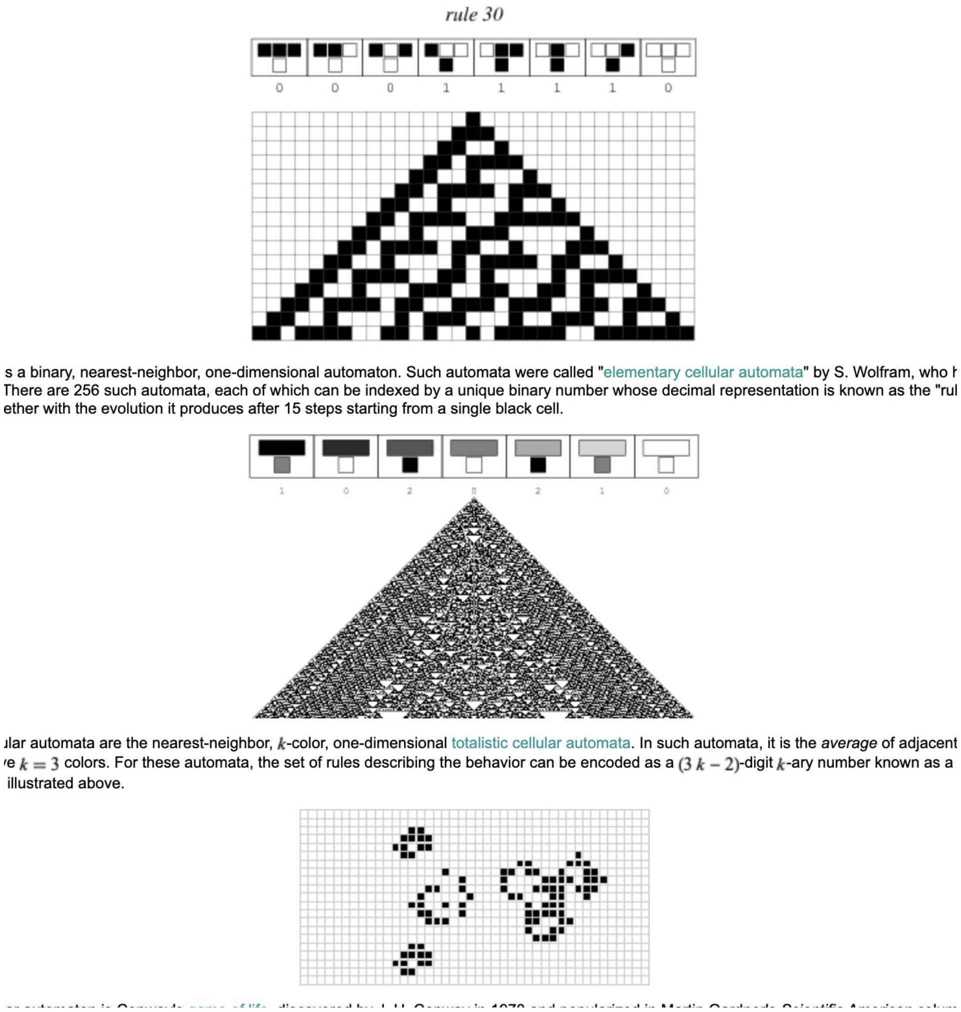


Smart Rockets Demo

Experimenting with genetic algorithms and behavior

Not totally sure how/if to incorporate

Wolfram CA resource



s a binary, nearest-neighbor, one-dimensional automaton. Such automata were called "elementary cellular automata" by S. Wolfram, who h
There are 256 such automata, each of which can be indexed by a unique binary number whose decimal representation is known as the "rul
ether with the evolution it produces after 15 steps starting from a single black cell.

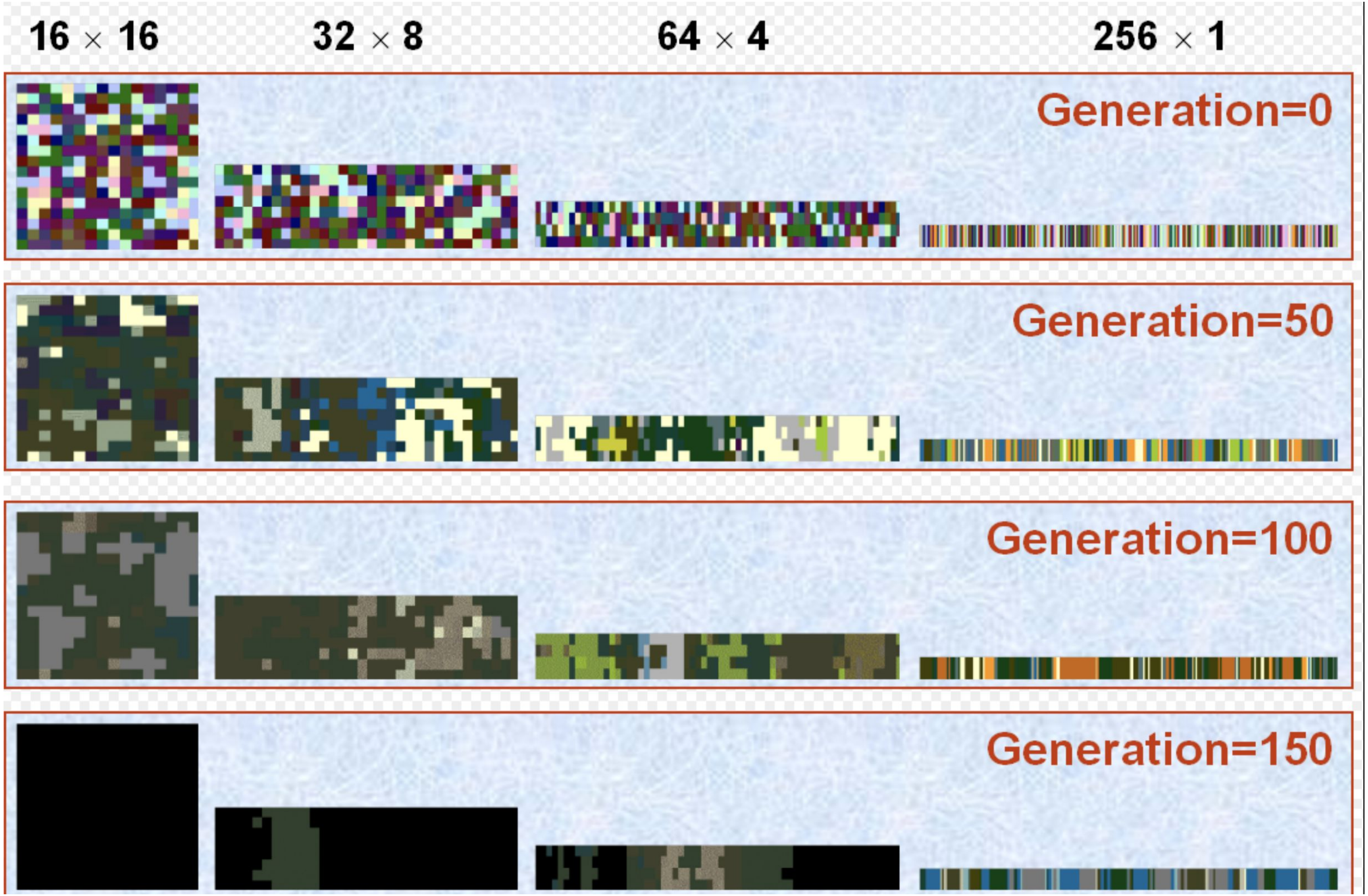
ılar automata are the nearest-neighbor, k-color, one-dimensional totalistic cellular automata. In such automata, it is the *average* of adjacent
/e $k = 3$ colors. For these automata, the set of rules describing the behavior can be encoded as a $(3\ k - 2)$-digit k-ary number known as a
illustrated above.

ar automaton is Conway's game of life, discovered by J. H. Conway in 1970 and popularized in Martin Gardner's Scientific American colum

CA

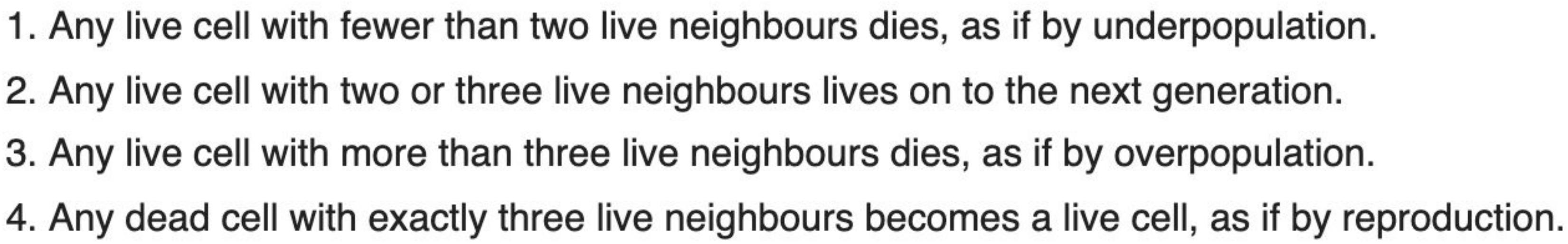
X

Genetic algorithms

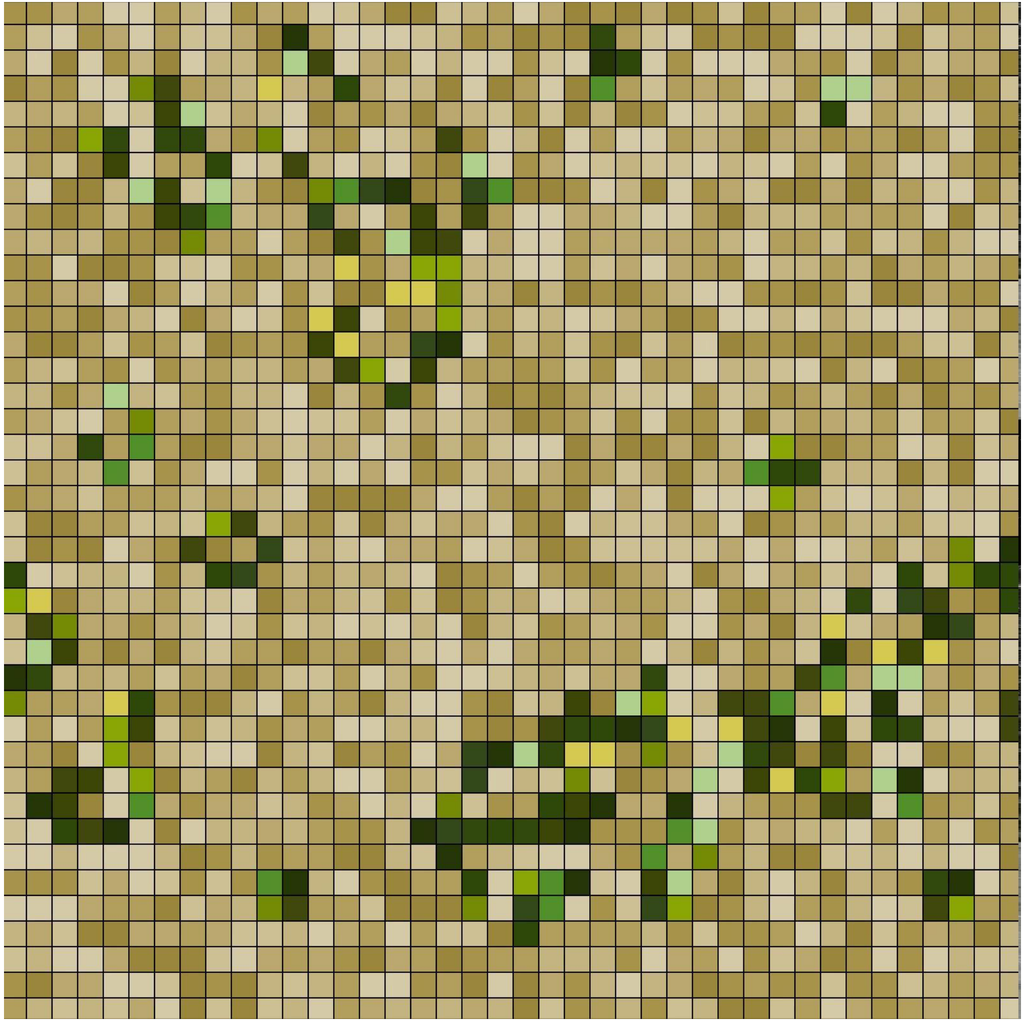


CA with randomized rule sets, and colors chosen randomly from a set list

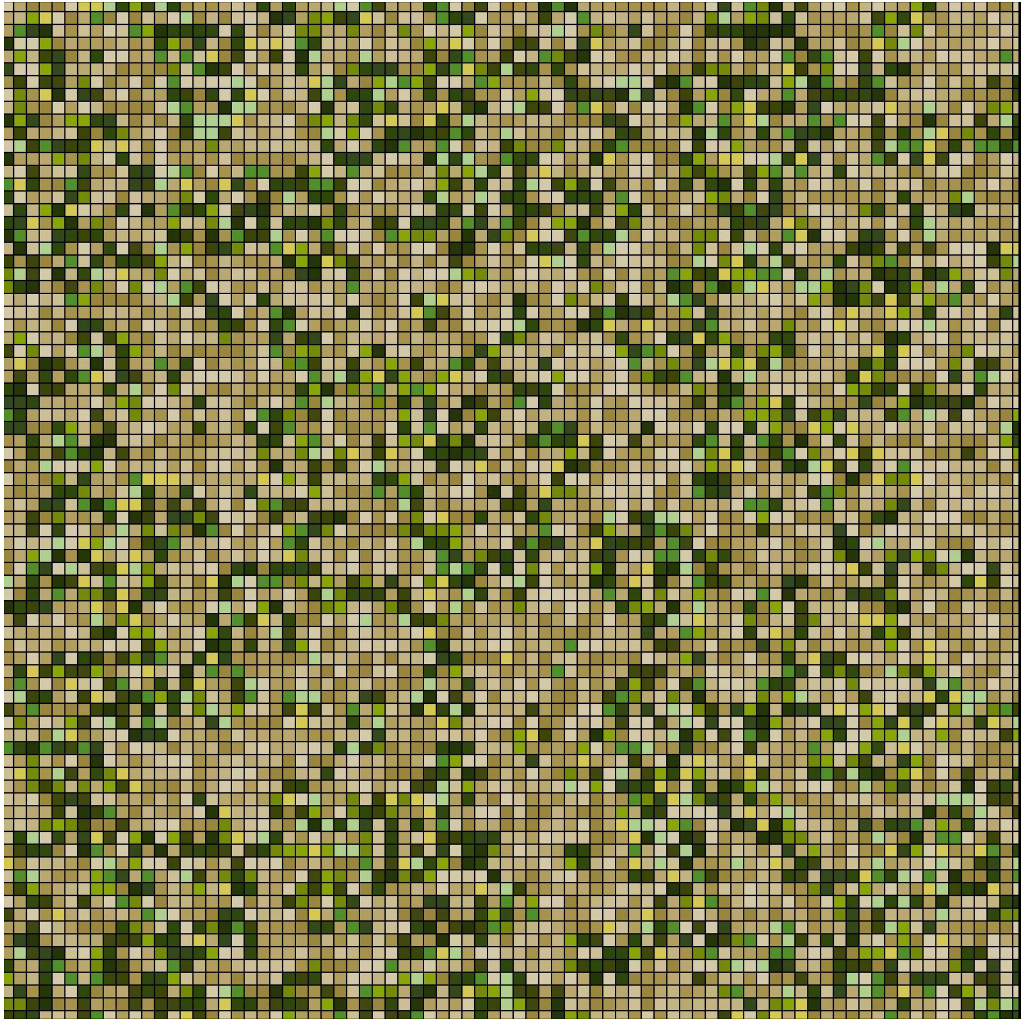
Conway’s Game of Life



1. Any live cell with fewer than two live neighbours dies, as if by underpopulation.
2. Any live cell with two or three live neighbours lives on to the next generation.
3. Any live cell with more than three live neighbours dies, as if by overpopulation.
4. Any dead cell with exactly three live neighbours becomes a live cell, as if by reproduction.



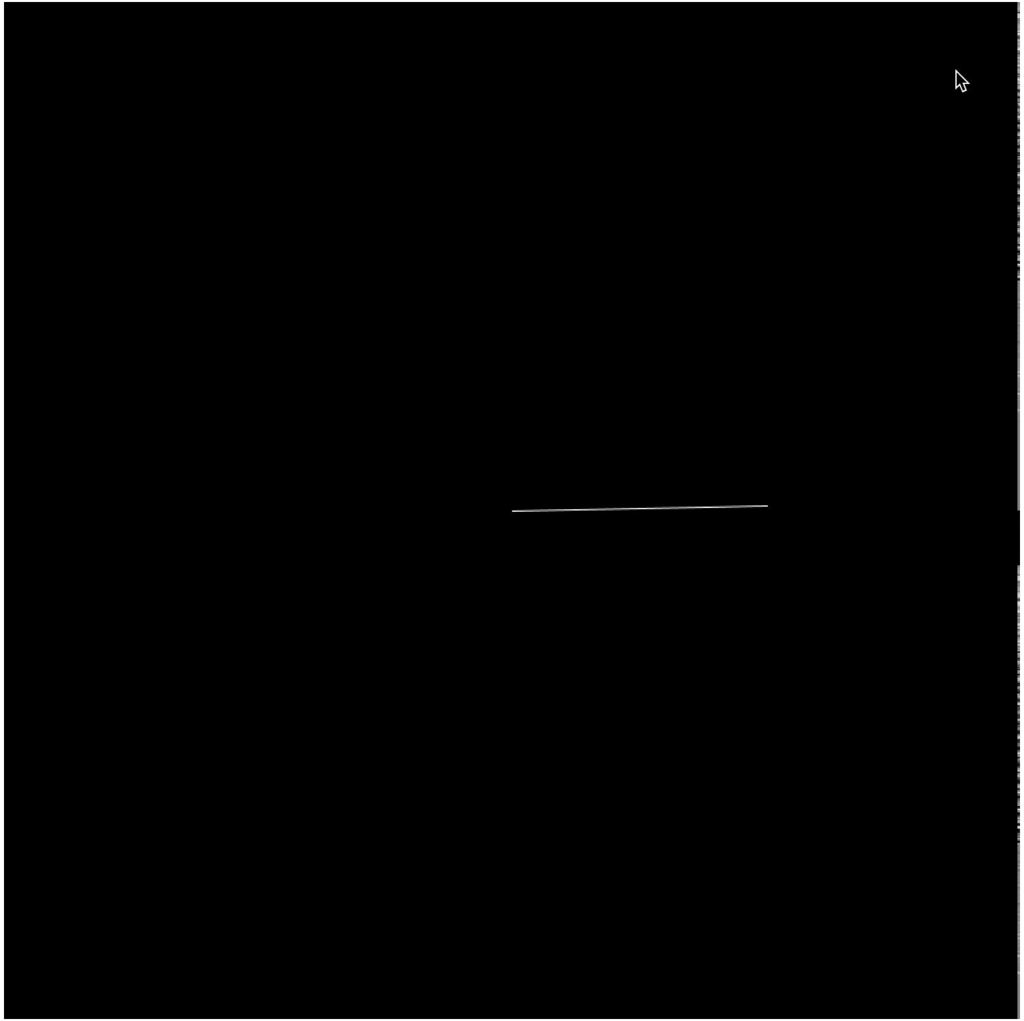
Game of Life: modified with new color rules



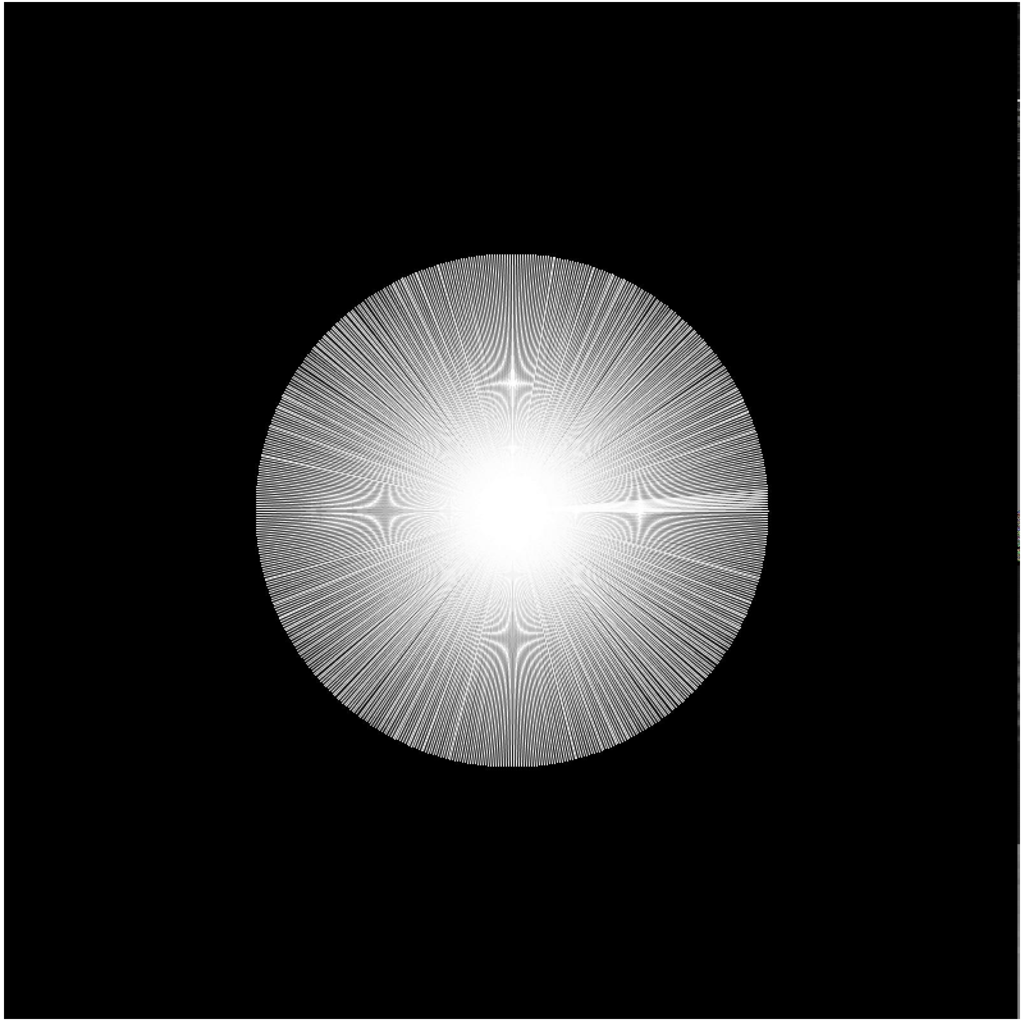
Game of Life: Same again, just zoomed out

Would like smoother transitions in between the cycles - but this seems like it would be tough to implement - also ideally I could put a radial sweep algorithm in that would run in between each generation - also seems tough and computationally difficult for processing maybe.

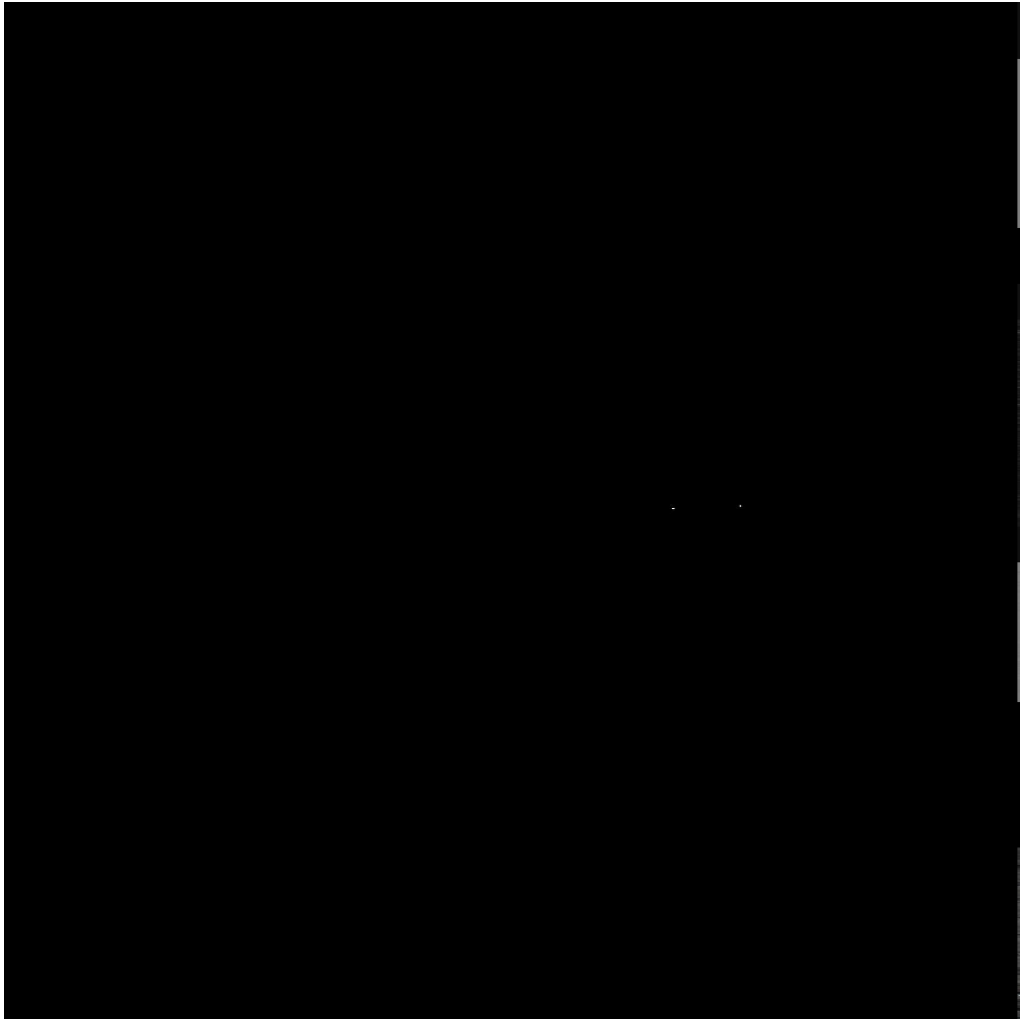
In addition, implementing different sized cells adds a lot of complexity, as the number of neighbor cells would not be constant.



Getting sweep line working

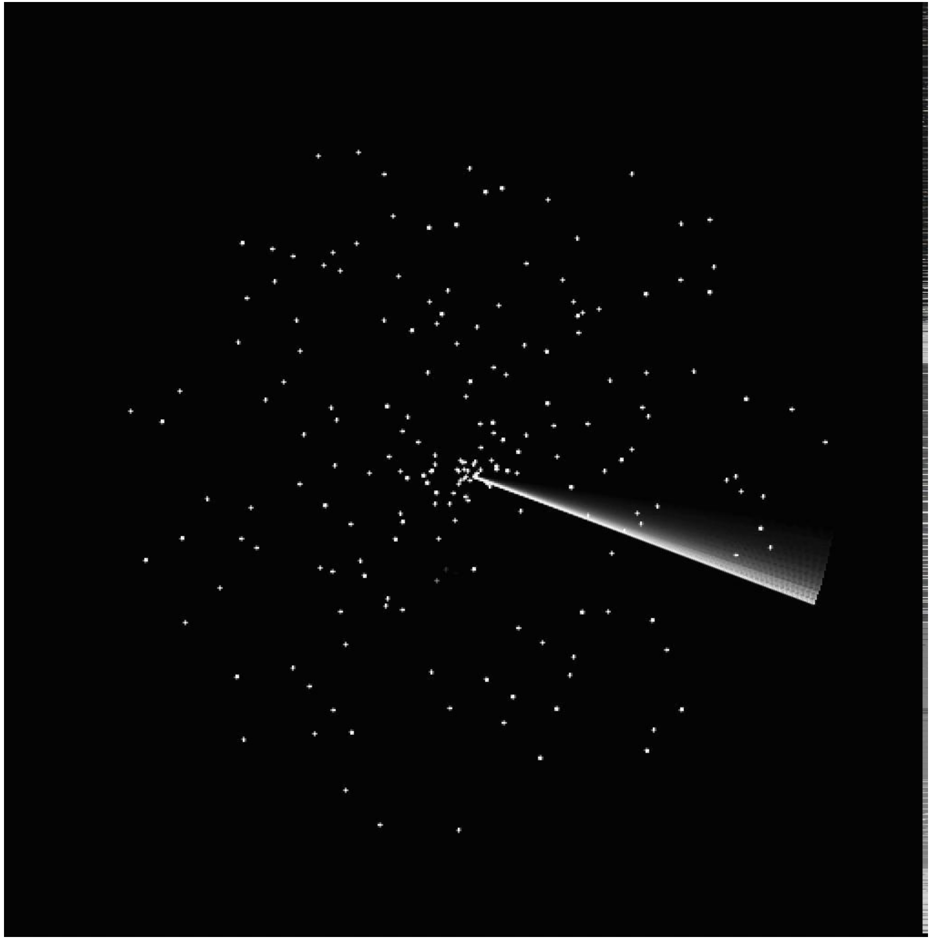


Keeping each line



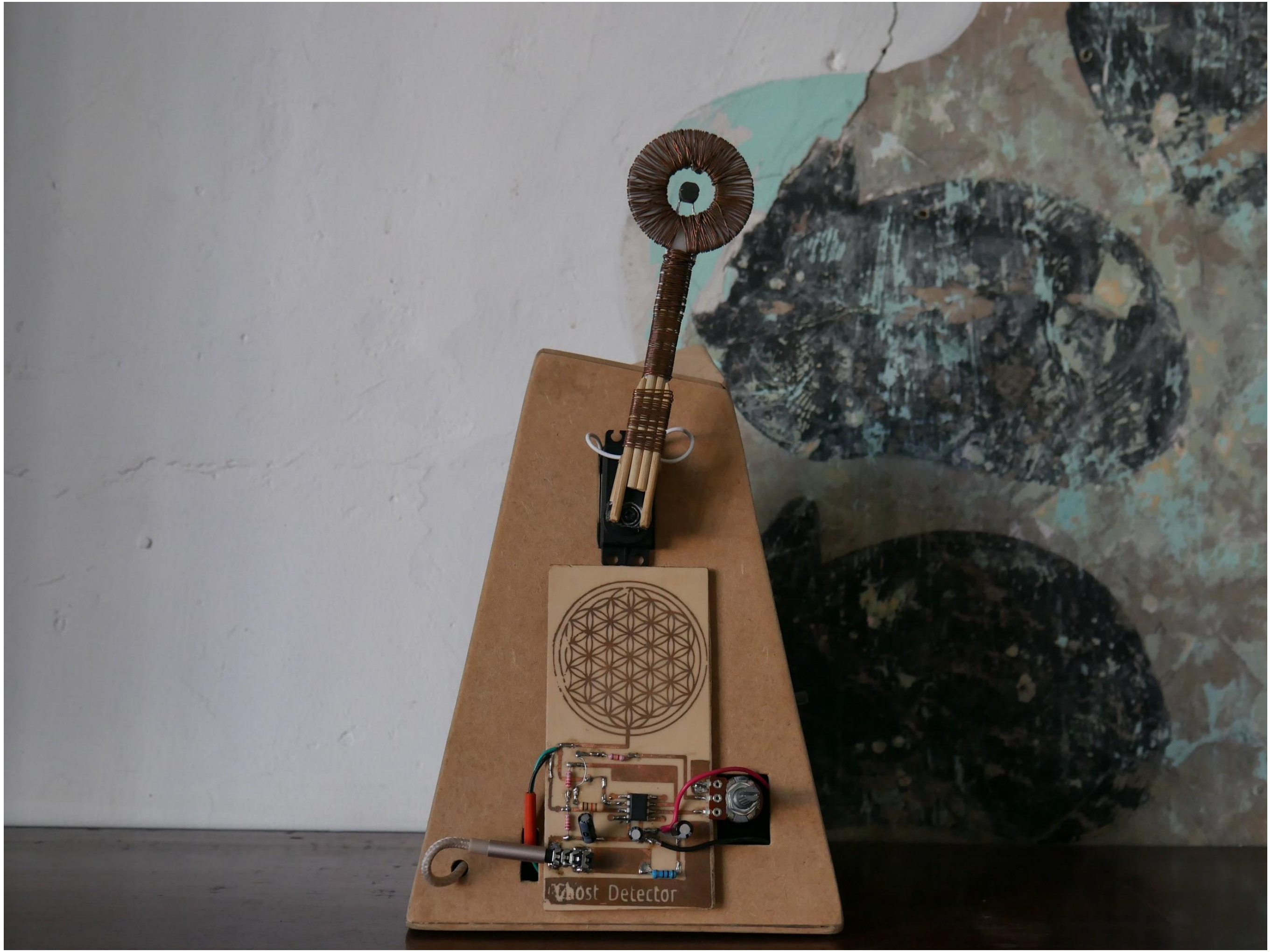
Dropping dots instead of drawing a line … mimicking sprinkler

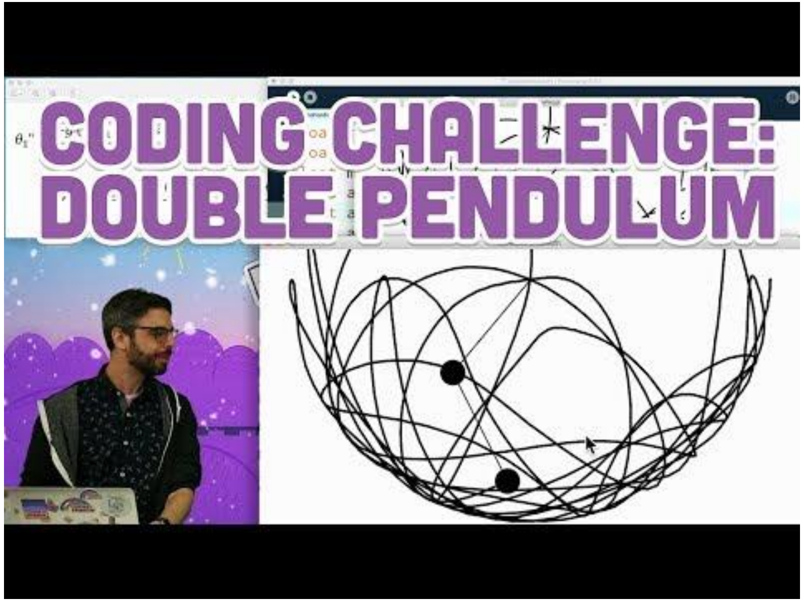
These are just early explorations… will pursue further this weekend

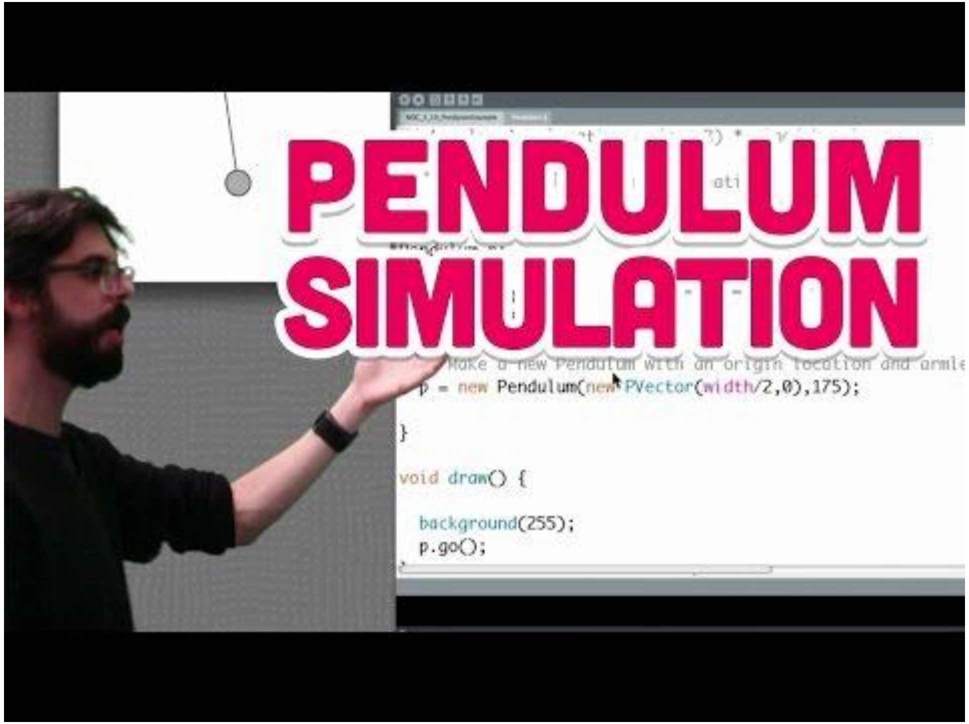


Tried to make a sprinkler that drops water as it goes around, and then the water will sink into the ground and disappear eventually … kinda works and i like how it looks … received feedback that it looks like a clock - which was relevant to other projects i was working on

Side note thought for myself : if a farmers sprinkler were to break down, and stop working, could you think about that like time stopping for the farmer … he/she would have to stop the other things they are doing to fix the sprinkler, and only when it was rotating again could ‘valuable time’ continue for the farmer …….. Pivot sprinkler metaphorically acts as a clock where time = money etc...


Ghost Detector

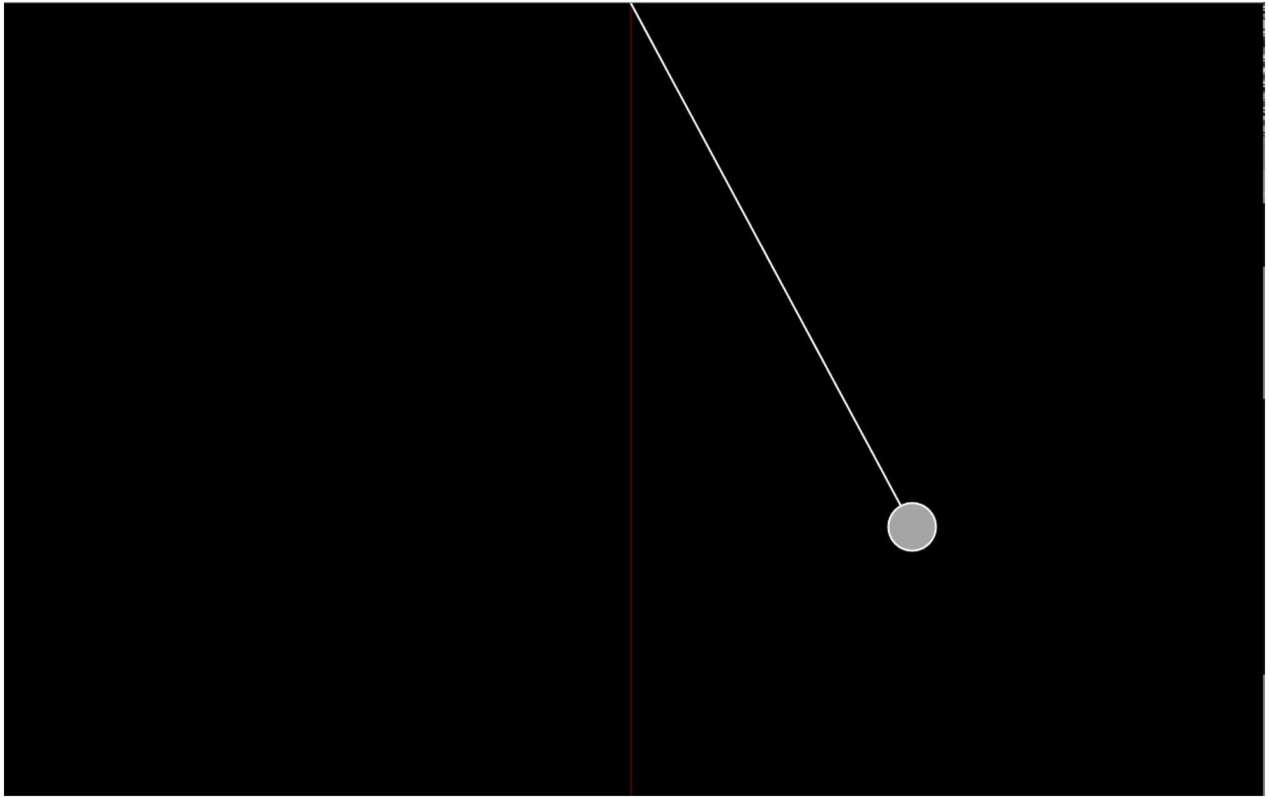




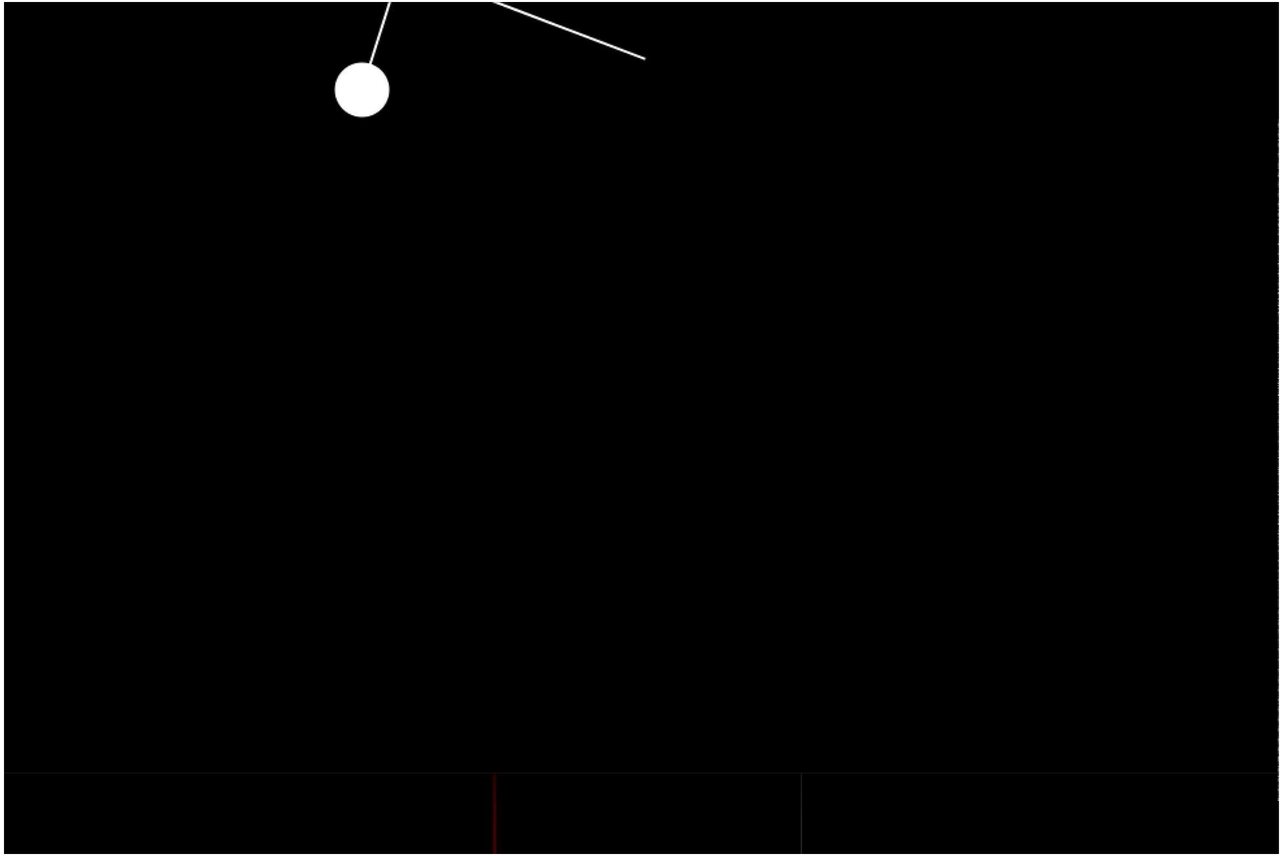
```
  // Make a new Pendulum with an origin location and armle
  p = new Pendulum(new PVector(width/2,0),175);

}

void draw() {

  background(255);
  p.go();
```

The previous exploration which ended up looking like a clock got me thinking about pendulums, which are a big part of my Mérida studio class, and so next I plan to take a stab at riffing off of these examples

https://www.myphysicslab.com/pendulum/double-pendulum-en.html



Pendulum set up like a metronome



Double pendulum set up like metronome

Same as before, but with keypress commands to adjust the length of the pendulum

Same as before, but with keypress commands to adjust the length of the pendulum

Think the math is wrong somewhere … doesn’t look quite right

NEXT STEPS

- More interaction -> interface
- Functions that affect the length of pendulum
- More detailed drawing of pendulum / better visuals in general

Code from animations:
https://github.com/mwbernard9/ct3_explorations

Other sources:

https://www.youtube.com/watch?v=W1zKu3fDQR8&t=1056s

https://www.youtube.com/watch?v=FWSR_7kZuYg

https://github.com/CodingTrain

(thank you daniel shiffman)