

## Project Proposal

### Project Description

Name: Maparoni-n-cheese

Description: Maparoni-n-cheese is a basic 2D map-maker. Maps can be made custom, random, or a combination.

### Competitive Analysis

Other map editors have many features, and most similar to mine. For example, [Inkarnate](#) has map editing (forest, mountain, path brushes) as well as random *land* generation. My map will have map editing, random land generation, *and* random map object generation. I will not be implementing paths (but plan on rivers) however. Something like [Wonderdraft](#) has very similar specifications as well, but it also has naming (of oceans, mountain ranges, etc.). Inkarnate has this as well, and I do not plan on adding this feature at the moment, but may consider it if time allows.

### Structural Plan

Main class: map\_maker

event methods:

on\_mouse\_scroll → change size of cursor (for size of objects mainly)

on\_mouse\_press → carry out cursor action

on\_mouse\_motion → for updating cursor position

on\_mouse\_drag → for carrying out multiple cursor actions

on\_draw → for drawing everything on the screen

on\_resize → for updating everything on a resize event

utility methods:

make\_map\_object → for creating specific map objects based on args

change\_cursor\_type → for changing the action of the cursor

make\_random\_map → using Voronoi to create random regions

Map object classes (tree; mountain; river; etc):

most-useful methods:

make\_components (generalized) → making geometric shapes of object

intersects → to test if intersects with another map object

draw → if individual object needs to be drawn

GUI:

Notable attributes:

buttons → list of Button instances to hold a function for calling

Layer:

Notable attributes:

regions → list of Regions to hold map objects

Notable Methods:

add → add a map object to region

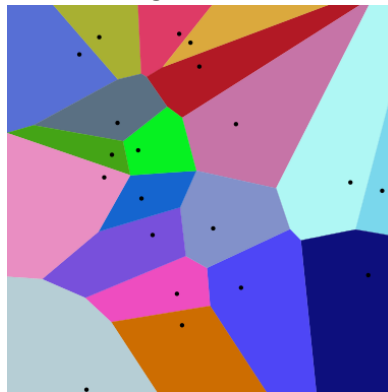
add\_if\_not\_intersecting → add if not intersecting any objects on map

update → updates regions list if resized

## Algorithmic Plan

Voronoi Diagrams:

Voronoi diagram looks like this:



From [Wikipedia](#)

It's use in this project is to split the map into regions (biomes, essentially) for random map generation. The regions will define things like forest, mountain ranges, etc.; and rivers may appear on the borders of these regions or sometimes inside them.

This is by far the most algorithmically-complex part of the project, as it may involve something like [Fortune's algorithm](#) to compute these areas.

## Timeline Plan

April 18: GUI complete with buttons/help

April 21: Voronoi (or similar/variant of) working

April 23: Random map generation working (and consequently manual map making)

## Version Control Plan

I am using a GitHub [repository](#) to back up my code. I use Git to interface with GitHub so that I can work on multiple devices as well as back it up.

The screenshot shows the GitHub repository page for `kcmw3e / maparoni-n-cheese`. At the top, there are buttons for Unwatch (1), Star (0), and Fork (0). Below this is a navigation bar with links to Code, Issues (0), Pull requests (0), Actions, Projects (0), Wiki, Security, Insights, and Settings. A message states "No description, website, or topics provided." with an Edit button. Below this, statistics show 12 commits, 2 branches, 0 packages, 0 releases, and 1 contributor. A bar contains buttons for Branch: GUI, New pull request, Create new file, Upload files, Find file, and Clone or download. The main content area shows the commit history for the `gui` branch, which is 2 commits ahead and 3 commits behind master. The latest commit is 213a693, made 18 hours ago. The commit list includes files like `.vscode`, `__pycache__`, `README.md`, `app.py`, `circle.py`, `component.py`, `gui.py`, `layer.py`, `line.py`, and `mapmaker.py`, each with a description of the changes and a timestamp.

| File                      | Commit Message                                     | Time         |
|---------------------------|--|--------------|
| <code>.vscode</code>      | gui and buttons are almost working!                | 18 hours ago |
| <code>__pycache__</code>  | gui and buttons are almost working!                | 18 hours ago |
| <code>README.md</code>    | OK, I promise this one's good now.                 | 2 days ago   |
| <code>app.py</code>       | Objects are made better, but performance is bad :( | 6 days ago   |
| <code>circle.py</code>    | Fixed "import math" on comment line                | 9 days ago   |
| <code>component.py</code> | Drawing is now MUCH faster using pyglet batches    | 4 days ago   |
| <code>gui.py</code>       | gui and buttons are almost working!                | 18 hours ago |
| <code>layer.py</code>     | OK, I promise this one's good now.                 | 2 days ago   |
| <code>line.py</code>      | Initial Uploads!                                   | 9 days ago   |
| <code>mapmaker.py</code>  | gui and buttons are almost working!                | 18 hours ago |

## Module List

[pyglet](#)

## TP2 Update

No changes

## TP3 Update

No major changes. File IO was added, and rivers/fancy lakes were foregone.