

## 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

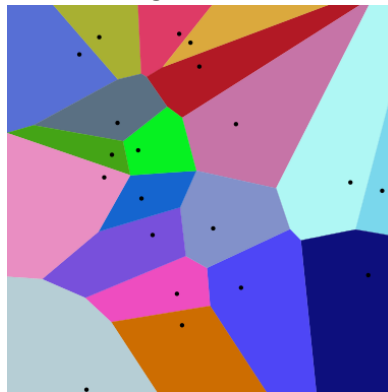
add\_if\_not\_intersecting → add if not intersecting any objects on map

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 a GitHub repository page for the user kcmw3e and the repository named 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 at the bottom indicates the current branch is GUI, with options to create a new pull request, create a new file, upload files, find files, or clone/download. The main content area shows a commit history table with columns for file name, commit message, and time ago. The latest commit is 213a693, made 18 hours ago, with the message "kcmw3e gui and buttons are almost working!".

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

## Module List

[pygame](#)

## TP2 Update

No changes