

# Quilt Project - DRAFT

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### **Introduction:**

Our client wants us to make an interactive shiny app that takes climate data such as monthly temperature averages and long-term trends and convert it into a pixelated quilt pattern. The data will be from daily temperature records collected between 1955 and the present from Hubbard Brook. The main goal of our project is to have users be able to make their own personal quilt designs from the selected time frame of temperature data they want to include. There will be sources to get the results for seam allowances, hex color to fabric color, optional borders, being able to download the completed raster design of the quilt, and color area calculations. Our client would also like us to expand beyond the time frame of 12 years, so our app will allow users to explore long-term climate variability.

To accurately represent the data in quilt form, we will process it into a grid format, where each cell represents a specific time period and location. This requires rasterization techniques in which temperature values are converted into pixel data that can be mapped to specific quilt patterns. Our app will allow you to customize the quilt design by being able to adjust the grid size, patterns, and color schemes. By blending data visualization, environmental research, and textile art, our app offers a hands-on way to explore climate history.

## App Mock-up:

Design	Data Setup	Download & Share	User Guide
<h1>Design Your Quilt!</h1>			
<p><b>Desired Quilt Size</b></p> <p>Note: ALL squares will be 6" x 6"</p> <div>Please Select ▾</div> <ul style="list-style-type: none"> <li>5x7 (Baby)</li> <li>6x9 (Crib)</li> <li>9x11(Throw)</li> <li>12x15 (Twin)</li> <li>14x18 (Full)</li> <li>15x18 (Queen)</li> <li>18x18 (King)</li> </ul>		<p><b>Color Scheme</b></p> <p>Please choose gradient or custom colors</p> <p><b>Color Quantity</b></p> <div>Please Select ▾</div> <ul style="list-style-type: none"> <li>5</li> <li>6</li> <li>7</li> <li>8</li> </ul>	

Design

Data Setup

Download & Share

User Guide

## Choose Your Data!

Choose Data Type

Please Select ▾

Temperature


Water Chemistry

Soils


Vegetation

Or... Upload Your Own!

Data Upload




### Time Period

Select Start Date 

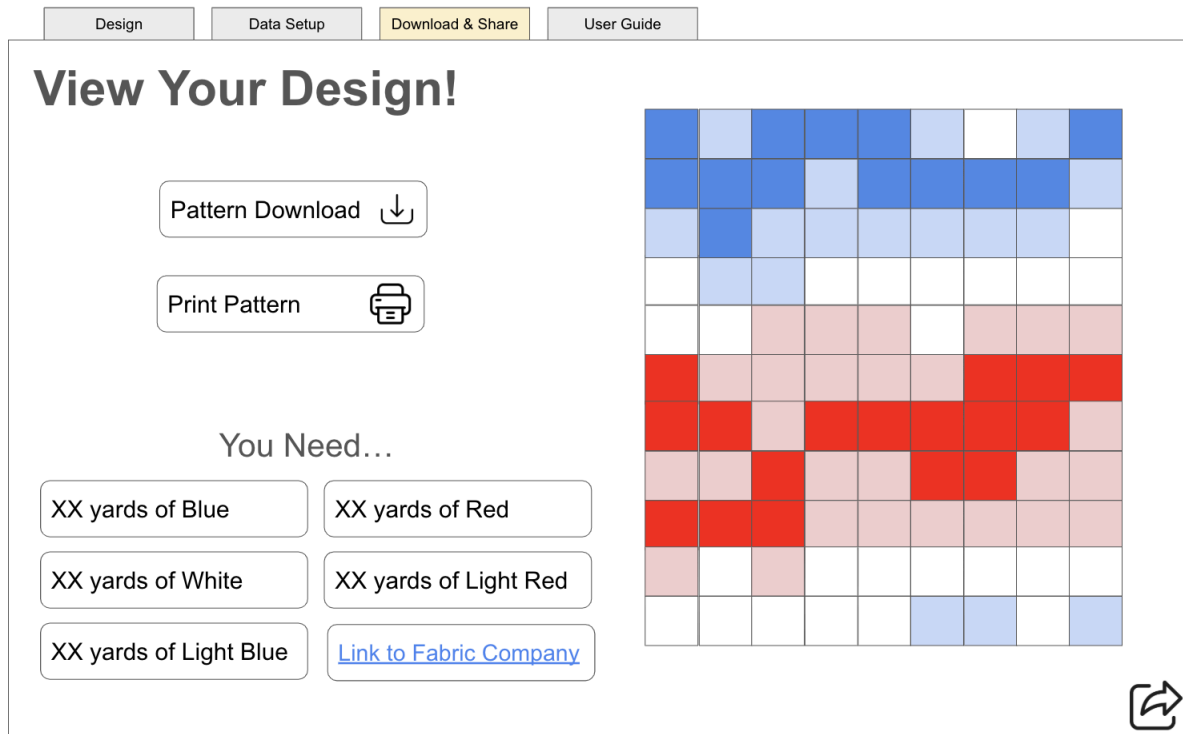
July

Su	M	Tu	W	Th	F	Sa
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Select End Date 

August

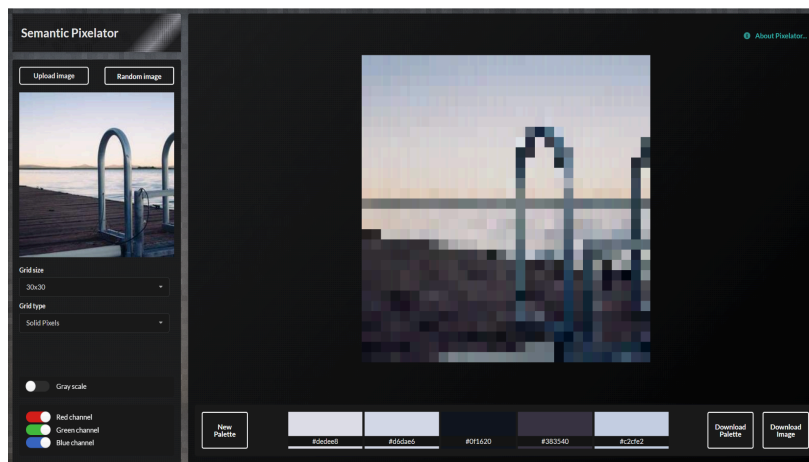
Su	M	Tu	W	Th	F	Sa
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					



Our user interface will feature four main tabs: a design tab, a data input and setup tab, a view your design and download your design tab, and a user guide tab. The design tab will give users the ability to choose the size of the quilt they desire to make, as well as their desired colors or scheme for the quilt. Users will also be able to choose the amount of different colors they want on their quilt, which can be helpful, especially when selecting the size of the quilt, for example, larger quilts might look better with more colors, and smaller quilts might look nicer with fewer colors. The second tab, the data setup tab, allows users to choose the type of data they want their quilt to represent from pre-selected data sets, or they can upload a dataset of their choice. Users will then select the dates and time period for which their data will be portrayed on the quilt. The third tab, the design view and download tab, shows the user a preview of their quilt based on the options and preferences they had input on the other tabs. The user also has the opportunity to download or print a PDF of their design, as well as share it with family or friends via social

media, text message, etc. This page also shows the user how much fabric they will need for each color they chose on the previous tab, which will be calculated to include a  $\frac{1}{4}$  inch seam allowance for each square. There will also be links provided for users to where they can purchase the fabric required to make their quilt. Finally, the fourth user guide tab, will simply contain step-by-step instructions on how to use the app interface to allow the user to have a smooth experience.

### Existing Apps:



This is an existing app called Semantic Pixelator that does a lot of the functionality that we would like our app to accomplish. It takes a photo that is either randomly generated or uploaded by the user and converts it into a pixelated grid of the colors in the photo. This is similar to the function we want to have where we have data and want to convert it into a pixelated grid for a quilt design. In this app you can also choose what size of grid you want, what the pixels look like, and change the color scheme slightly. You can also download the color palette with their hex numbers and/or the resulting pixelated grid. This is a lot of things we can use in our app, and will be helpful in seeing what is possible and how.

**Expected Issues:**

We expect we could find issues in several aspects of our app. One is that there is just a lot of data that we will have to sort through and clean before knowing we can use it in our app. This will be especially difficult when trying to filter through the data, since every row needs to have the same format for this to work. Another issue we could have is being able to match colors that the app produces for the design to actual fabric that you can buy to make the quilt. This shouldn't be too hard if we can get hex numbers for the colors produced, but certain fabric stores may not have all of the colors. Another issue could be making sure that the amount of data chosen by the user is a good fit for the quilt design they choose. This might be difficult to completely eliminate, but we can try to mitigate issues by having the user start with the quilt design and having the data sort itself based on this criteria. Lastly, there could be issues with the user uploading their own data to use in the app, since the data need to be in a specific format in order for it to work. We might be able to accomplish this, but it remains to be seen if it's even possible.

**Sources:**

Hubbard Brook Data:

<https://portal.edirepository.org/nis/mapbrowse?packageid=knb-lter-hbr.59.14>

Semantic Pixelator App: <https://connect.appsiilon.com/pixelator/>