

Heat Quilt

Project description / Conceptual basis

For *Heat Quilt*, I will create a crocheted blanket heat map. A heap map is a data visualization technique where two variables are compared by blocking them into groups or blocks and creating a grid of these blocks. The shade of each block represents the amount of data points of said block (Wilkinson & Friendly, 2009). My blanket will be made of 25 15x15cm granny squares, where each square represents a data bucket. Inside each square will be a heating pad. Data(containing two variables) that is inputted to the blacket, and the data will be grouped to create a heat map that will be displayed through the temperature of each granny square, where warmer temperature represents more data in a specific bucket. Note that each variable in the input data must either be quantitative or consist of 5 qualitative groups. The actual colors of each granny square will not have any relation to the data, only the temperature.

Conceptually, *Heat Quilt* is exploring the bounds of data visualization and how we understand data. As data has become a larger part of our lives, understanding it is crucial to societal existence. And the current state of the data visualization field is brilliantly helping us to understand the overall trends and conclusions of data. However, these visualizations often detach data from its origin and embodied state. Seeing a pie chart does not connect us to the individuals, creatures, or objects that the chart is displaying. They are clumped, becoming colored groups flat on a page or screen. In some ways, data visualizations often perpetuate the self over the data. Because we believe we fully understand its meaning, we are above the data. I aim to explore how individuals can experience data in hopes to help us to understand it through a less anthropocentric and self-centered lens. Data Humanism, a phrase coined by Giorgia Lupi and that expresses a new age of data visualization embracing data's complexity, individuality, and imperfection, played a large role in the formation of this project (Lupi, 2017a). By making how we understand data more personal and less clear-cut, I am levelling the viewer with the data. The viewer can touch the data, feel it.

Finally, the aesthetic design of this project is also aimed at projecting a personal and deeply emotional connection to data. Taking inspiration from my own life, where I grew up with my grandmother crocheting blankets for anyone and everyone, I aim to attach a slightly nostalgic and gift-like notion to data. Data is something to be cherished and used as much as possible. Further, the color scheme of this blanket is dual fold. In a more technical note, making the colors of each square allows the viewer to orient the blanket in the correct direction so they can better understand the data they are experiencing. The colors themselves are based on one of the earliest heat maps, which was designed by Loua and describes districts of Paris (Wilkinson & Friendly, 2009). See the *Sketches / Circuit Drawings* section to see this design.

Bibliography

- Wilkinson, L., & Friendly, M. (2009) The History of the Cluster Heat Map. *The American Statistician*, 63(2), 179-184.
<https://www.cs.uic.edu/~wilkinson/Publications/heatmap.pdf>
- Lupi, G. (2017a, January 30). Data Humanism: *The Revolutionary Future of Data Visualization*. PRINT.
<https://www.printmag.com/post/data-humanism-future-of-data-visualization>
- Urmila. (2021, February 19). *African American Writers* [data visualization]. Observable (n.d.). Retrieved from:
<https://observablehq.com/@urmilaj/african-american-writers>
- Lupi, G. (2017b, October 1). *Data Items: A Fashion Landscape at the Museum of Modern Art* [installation] Museum of Modern Art, New York City, New York. Retrieved from:
<http://giorgialupi.com/data-items-a-fashion-landscape-at-the-museum-of-modern-art>
- Rachel, N. (2011). *Data Scarves* [Clothing]. Cool Hunting (2011, December 19). Retrieved from: <https://coolhunting.com/style/data-scarves/>

Materials

- 25 Adafruit Electric heating pads
- 13 ATTiny85's (or possibly fewer ATTiny84's)
- 13 coin batteries
- 1 ball of conductive yarn
- Computer (for data analysis)
- Arduino (to program ATTiny85's)
- Approximately 5 balls of yarn

Dimensions: 75x75 cm blanket

References / Inspiration

Urmila's work *African American Writers* is an example of an experimental data visualization describing African American Writers through different characteristics

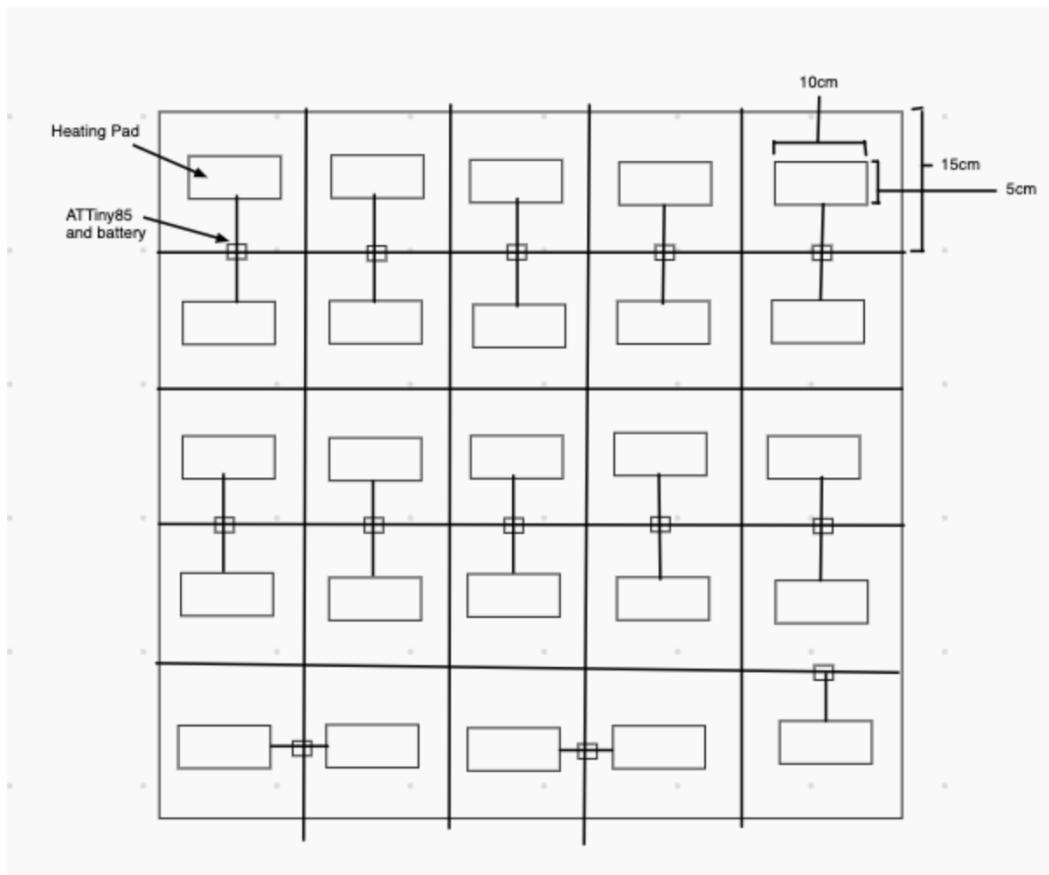
(Urmila, 2021). Although my piece is more related to data tangibility rather than visualization, this piece prompted me to think about new and creative ways of understanding data.

Giorgia Lupi's *Data Items* was an inspiration to me considering it's physical manifestation of data. As a part of her piece, Lupi chose multiple pieces of clothing to represent the data she was analyzing (Lupi, 2017b). In my own work, I aim to create physicality in the connection between individual and data in a similar way to Lupi.

In *Data Scarves*, Natalie Rachel designed and knitted scarves displaying data relating to the online shop Esty (Rachel, 2011). Rachel's designs contextualize data into soft and tangible objects, helping individuals to be immersed in it, in a similar way that I understand my piece will.

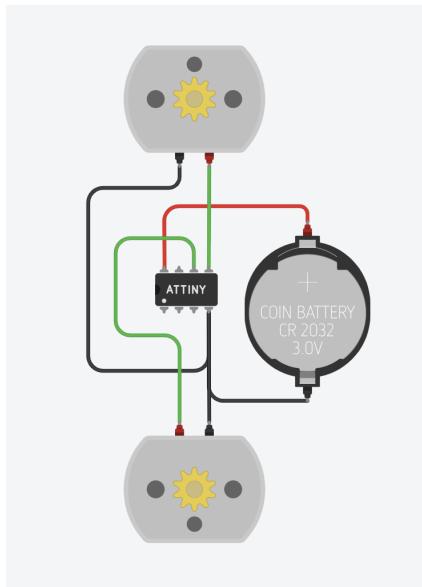
Sketches / circuit drawings

Blanket layout



Example circuit design between two heating pads and an ATTiny82

*Note the below diagram replaces both heating pads with DC motors because heating pads were not an option in Tinkercad software.

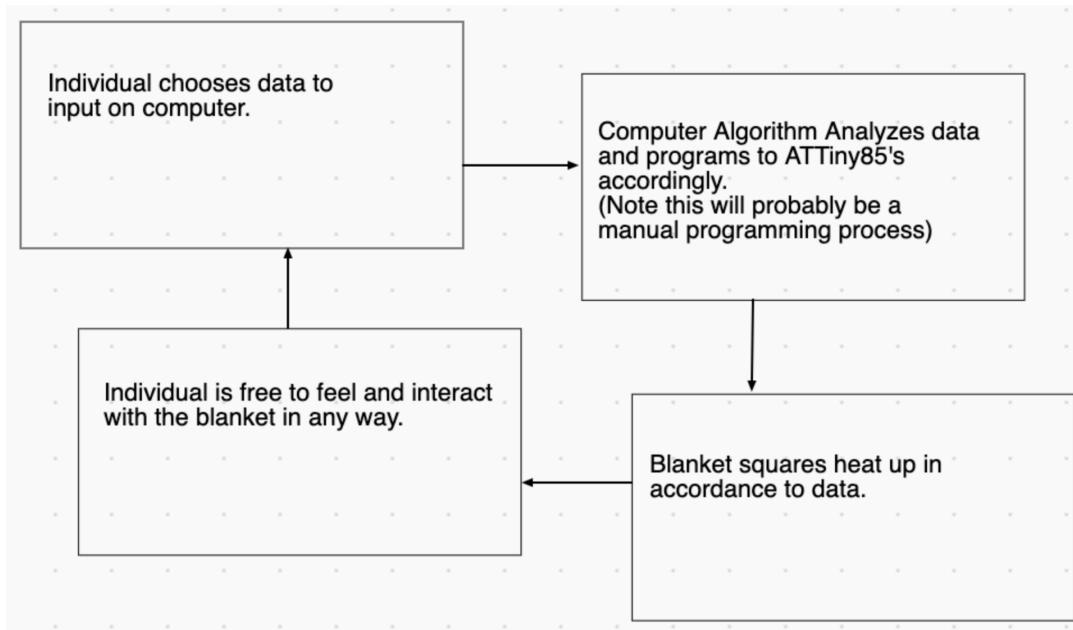


Color Scheme

I plan on crocheting solid squares of color matching the bolded black from an early heat describing districts of Paris (Wilkinson & Friendly, 2009).

Interaction flow chart

The interaction flow chart for this piece is relatively simple considering there is only one straightforward input of data.



Budget

<u>Item</u>	<u>Unit Price</u>	<u>Amount</u>	<u>Total</u>
Adafruit Electric heating pad	\$3.95	25	\$98.75
ATTiny85	\$0.99	13	\$12.87
Coin battery	\$0.32	13	\$4.16
Conductive yarn	\$14.95	1	\$14.95
Yarn	\$3.44	5	\$17.20
<u>Total</u>	-	-	\$147.93

