Thermal Resistance Circuit

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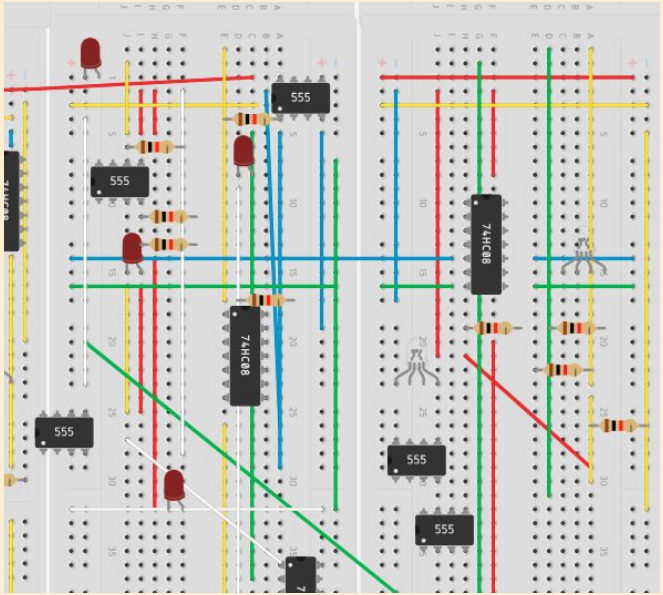
Project Overview

A *Thermal Resistance Circuit* is a graphical representation of a heat transfer problem that simplifies analysis through an electrical circuit analogy. The same can be said about this large-scale, breadboard-based map of NYC that visualizes the correlations between heat waves, electricity consumption and public service calls.



Theme Connections and Data Sources

- Cycles
- Ecosystems
- Interconnection
- Regeneration

311 Service Requests from 2010 to Present

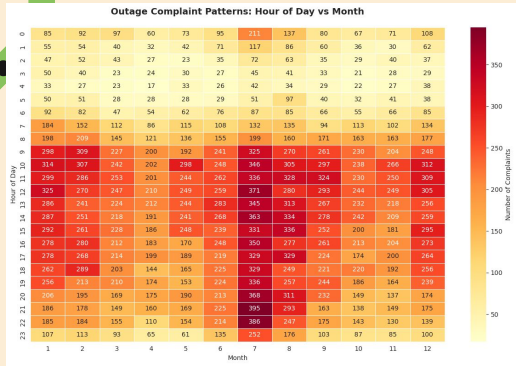
(Filtered for power outage complaints)

Electrical Consumption And Cost (2010 - Feb 2025)

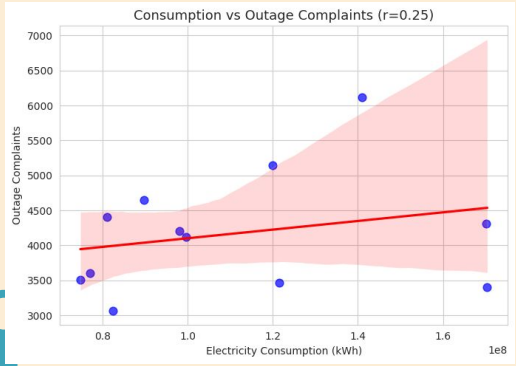
Hyperlocal Temperature Monitoring

EDA Snapshot

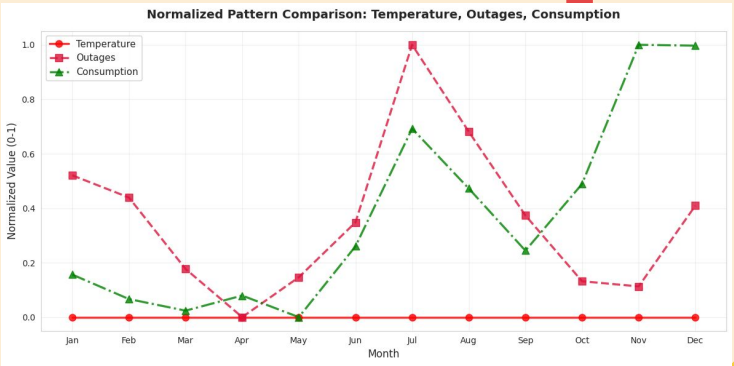
[Link to Code]



Outage Complaint Heatmap

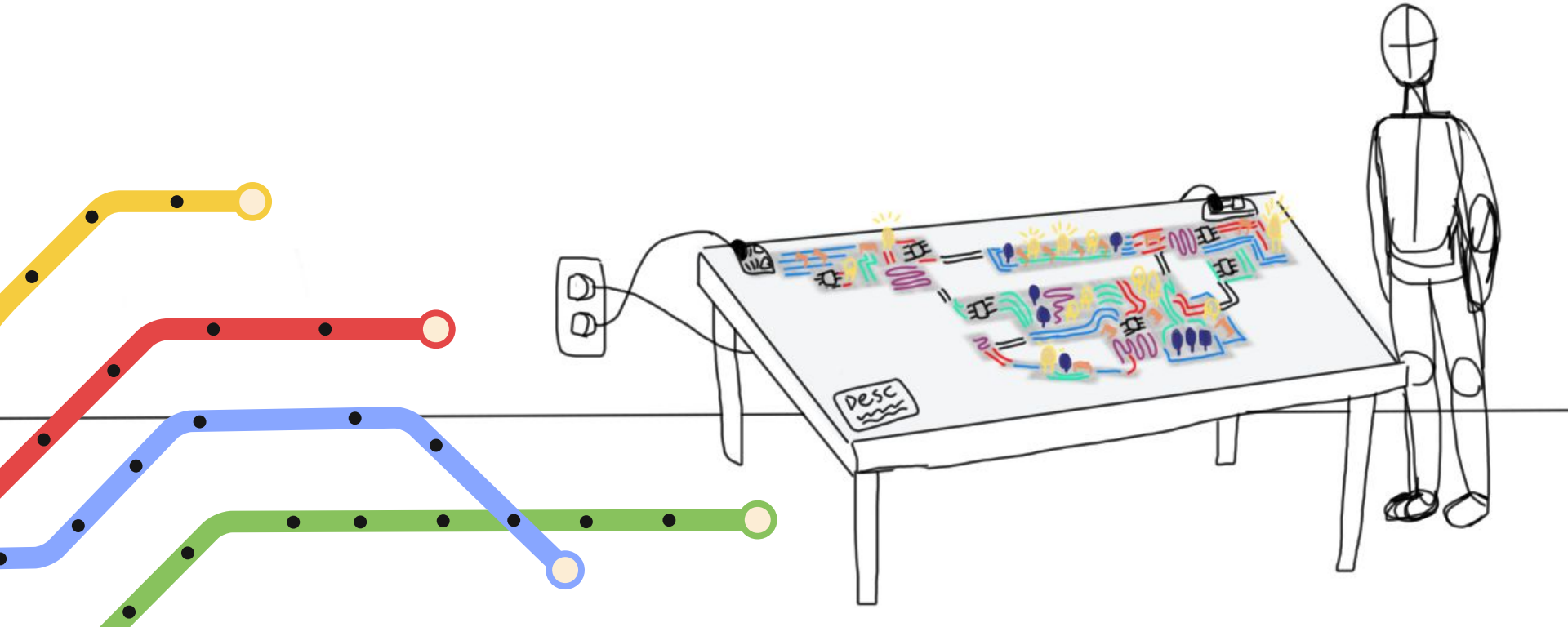


Correlation scatterplot between energy consumption and power outage complaints

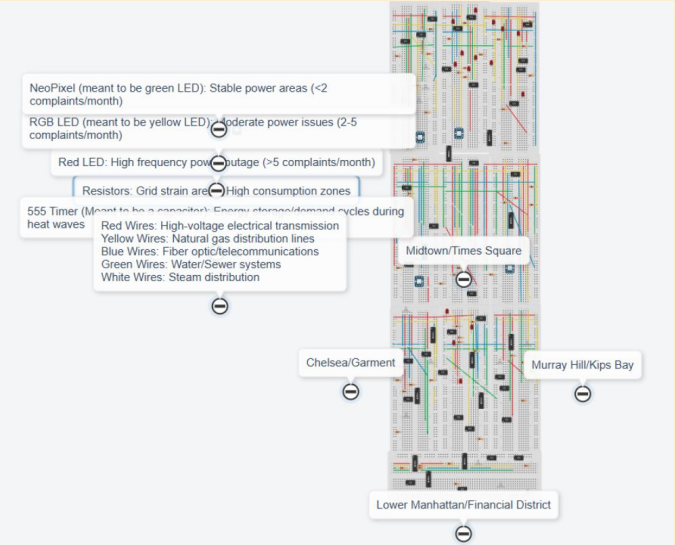


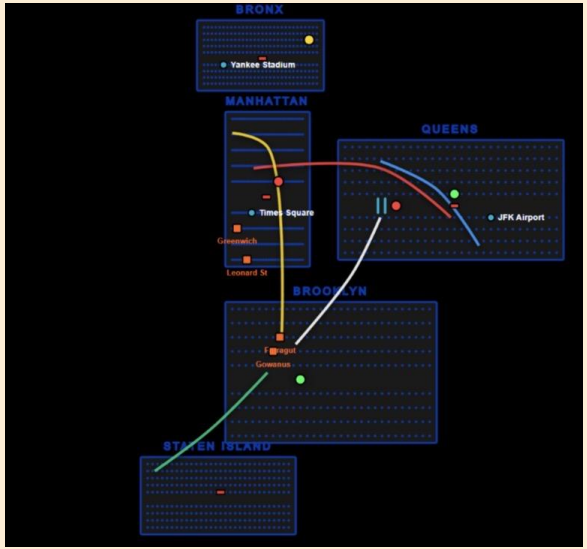
Seasonal comparison for air temperature, outages and consumption

Format & Medium



Sketches / Diagrams





Manhattan Tinkercad Prototype
(might crash!)

D3 Prototype
(Hosted at:
https://thermal-resistance-circuit.tiiny.site)

Feasibility & Timeline

01

December 2025 – January 2026

Source materials, begin assembly

02

February 2026

Complete wiring, integrate data mappings

03

March 2026

Install and calibrate in gallery

Reflection

Process:

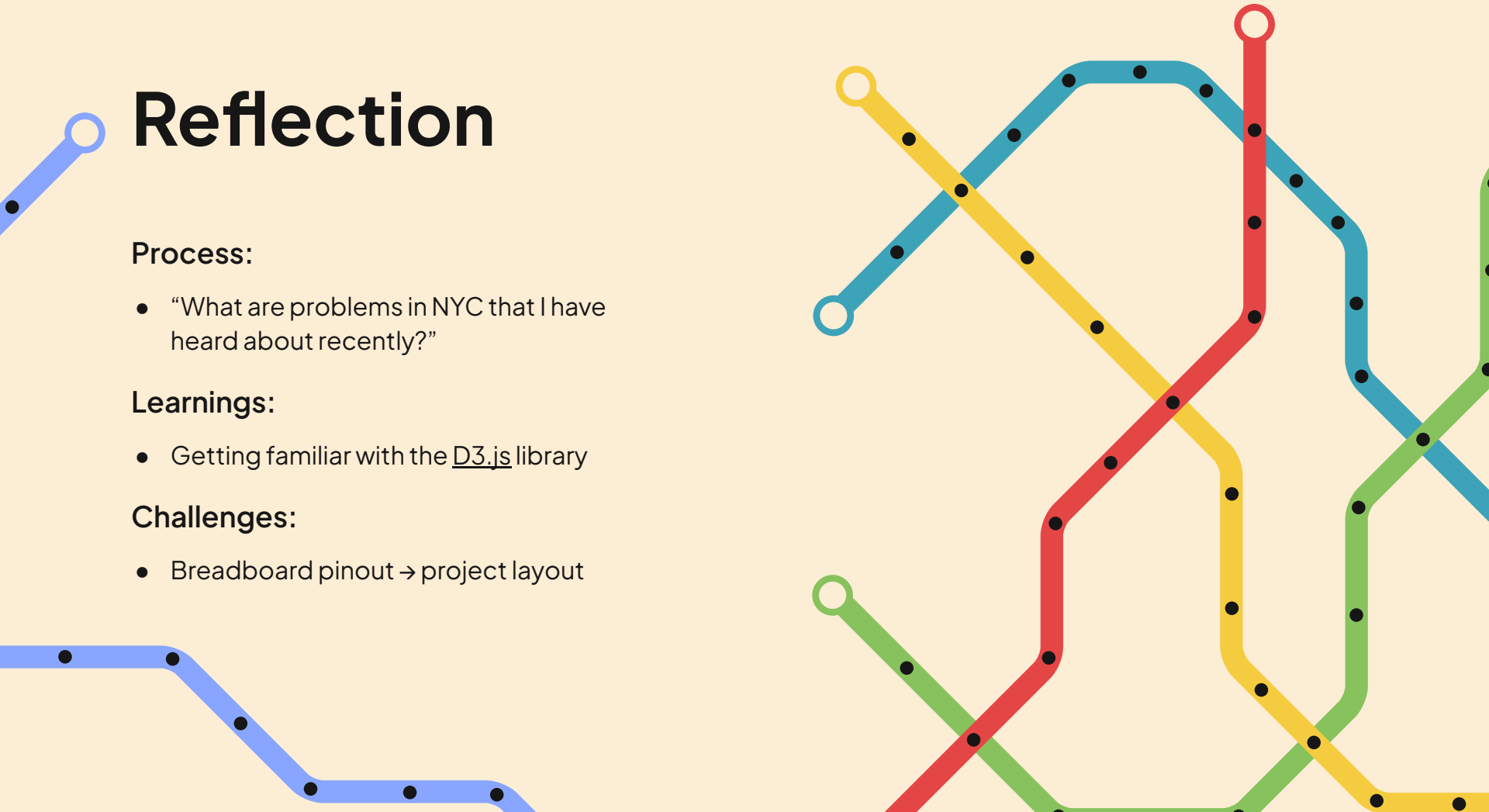
- “What are problems in NYC that I have heard about recently?”

Learnings:

- Getting familiar with the D3.js library

Challenges:

- Breadboard pinout → project layout



Thanks!

Do you have any questions?