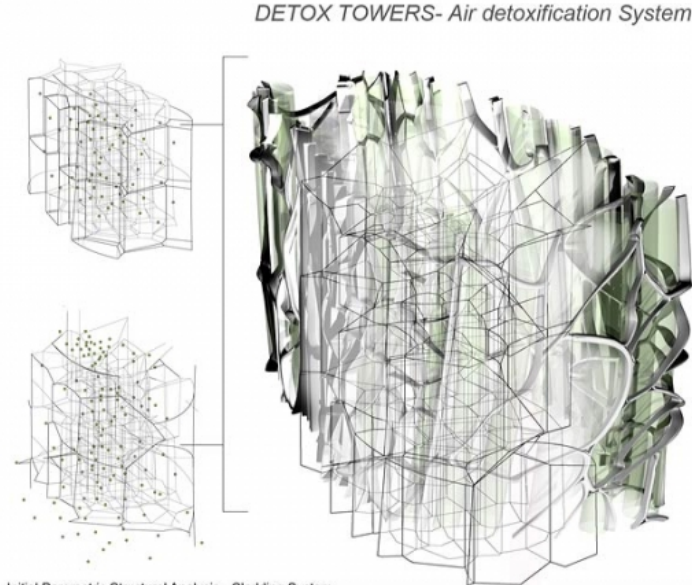
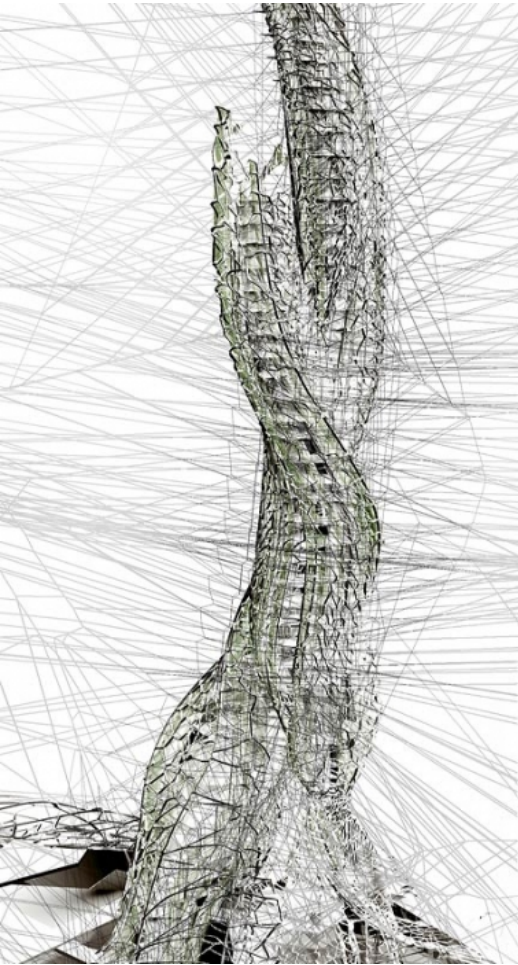


Cool Design

M259 Data Visualization

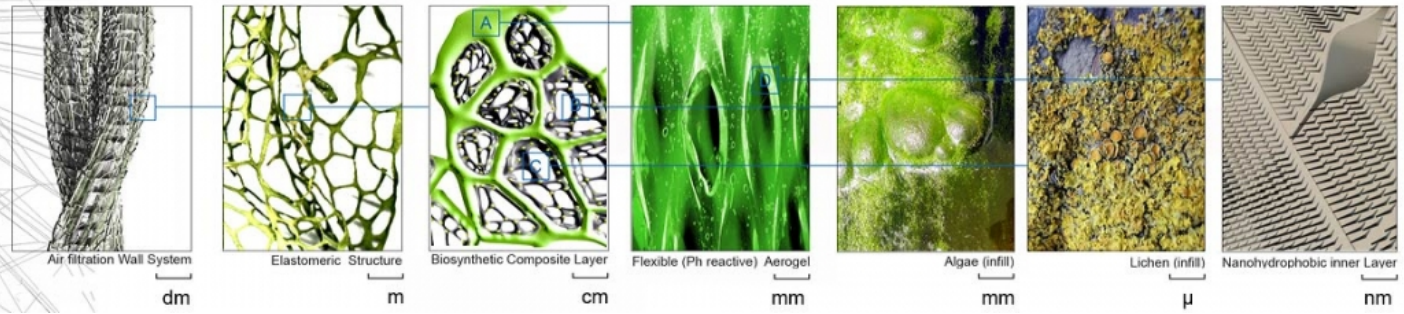
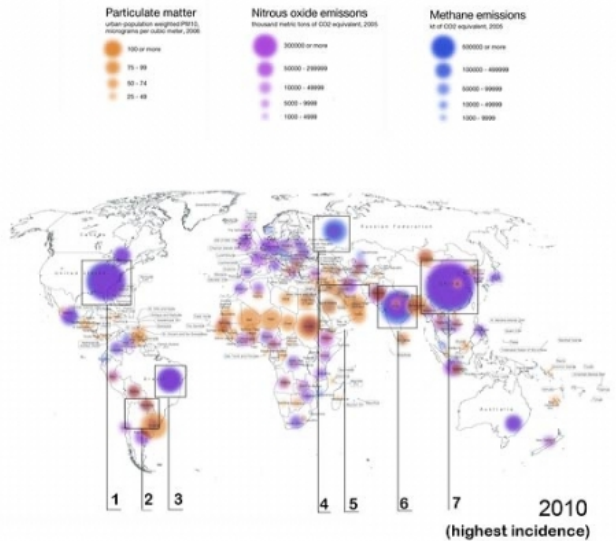
George Legrady
University of California, Santa Barbara

February 14, 2022



Initial Parametric Structural Analysis - Cladding System
(contraction/expansion) air intake/sunlight control integration

DETOX TOWERS- Air detoxification System - Evolo 2011 Skyscraper International Competition (Finalist)



Macroscale

Mesoscale

Microscale

Detox Membrane System (exterior)

Toxic Air
(intake)

Clean Air
(return)

Clean Air
(return)

Detox Membrane System (interior)

NEXT GENERATION HIGH-RISE RESIDENCES

DETOX TOWERS - 2050

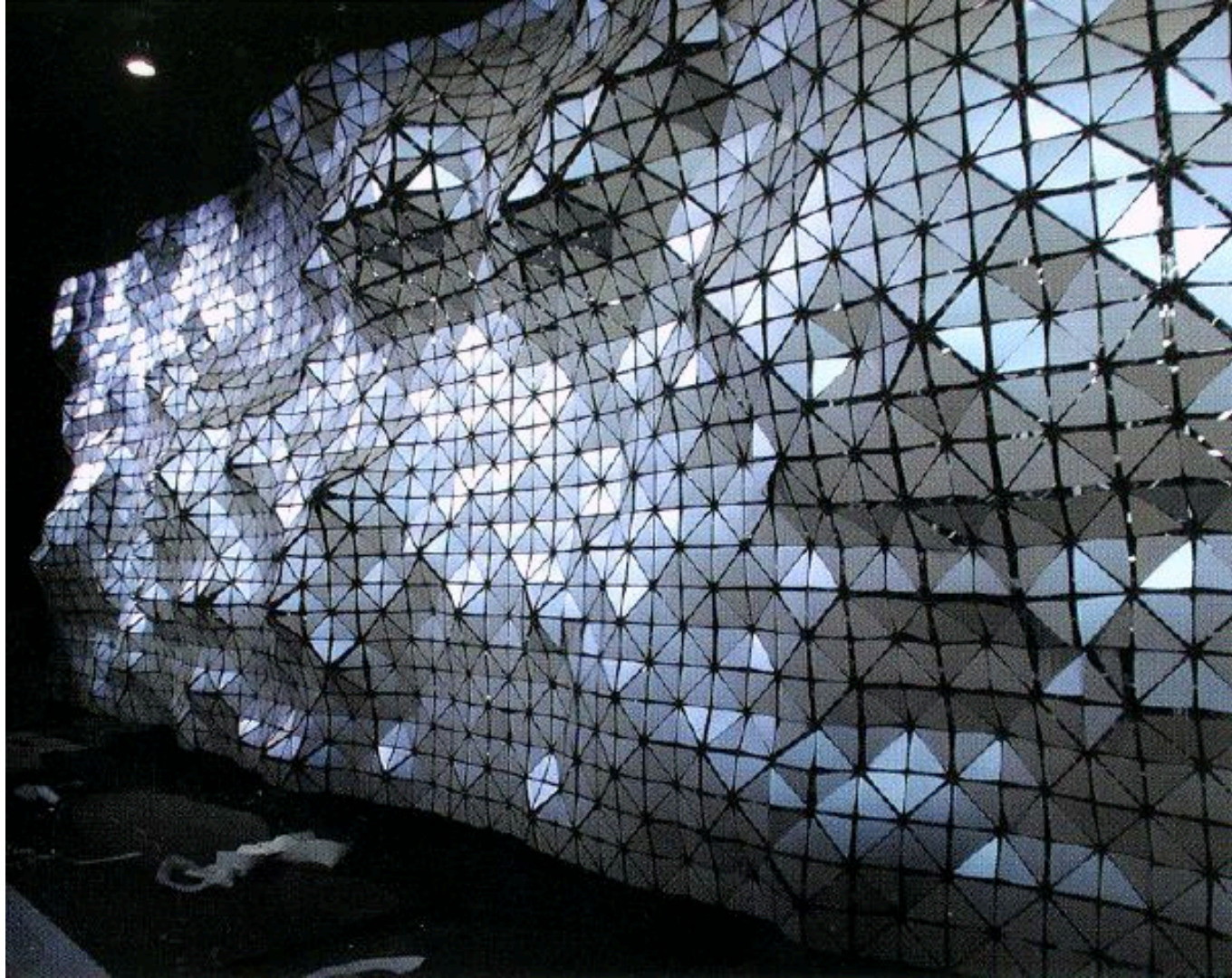
6660

Buildings are currently the highest single contributors to anthropogenic climate change according to approximately 40% of the world's current energy consumption. Projections from the Intergovernmental Panel on Climate Change (IPCC) estimate that advancements in building energy efficiency could potentially reduce anticipated global carbon emissions up to 30% by 2050. Yet, emerging global economies are projected to increase exponentially energy, water consumption and have increased due to the unforeseen density and scale of new urbanizations. Next generation building technologies that take advantage of the opportunity to leverage accelerated innovation of building technologies to diminish the ever growing pressures on ecosystems. We anticipate that in this pursuit, architecture will shift into considering the new models of energy consumption and material organization to better appropriate technology that can effectively designed to balance resource inputs and outputs. This proposal addresses the opportunity of developing an internal (Part A) and external membrane system (Part B) that through LULU and CIVILICULTURE MATTER NETWORKS can actively process matter, and contribute significantly to decrease energy consumption. DETOX Tower opens a new frontier that through MULTISCALE material interdependencies that controls all the necessary transformation processes aims to power on new sustainable building systems incorporating biotic and abiotic integration. The aim to contribute through this proposal to the discussion and analysis of new methods to control energy exchange, storage and processing of matter through increase activation that enables for artificial building integration. The rethinking of the matter as a resistance to biological agents can unlock unforeseen opportunities of sustainable architecture efficiency.



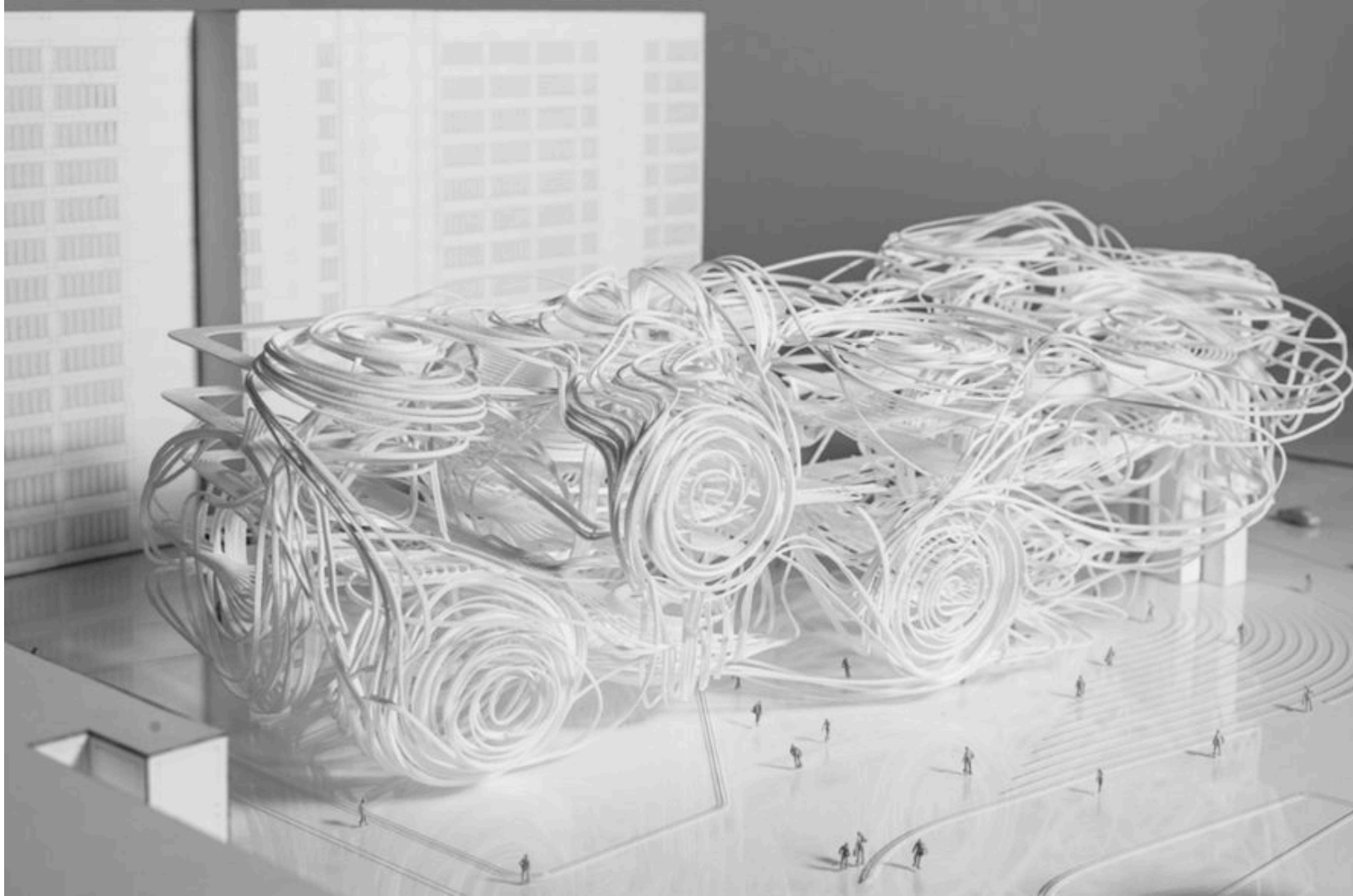
Aegis Hyposurface
Marko Gouldthorpe

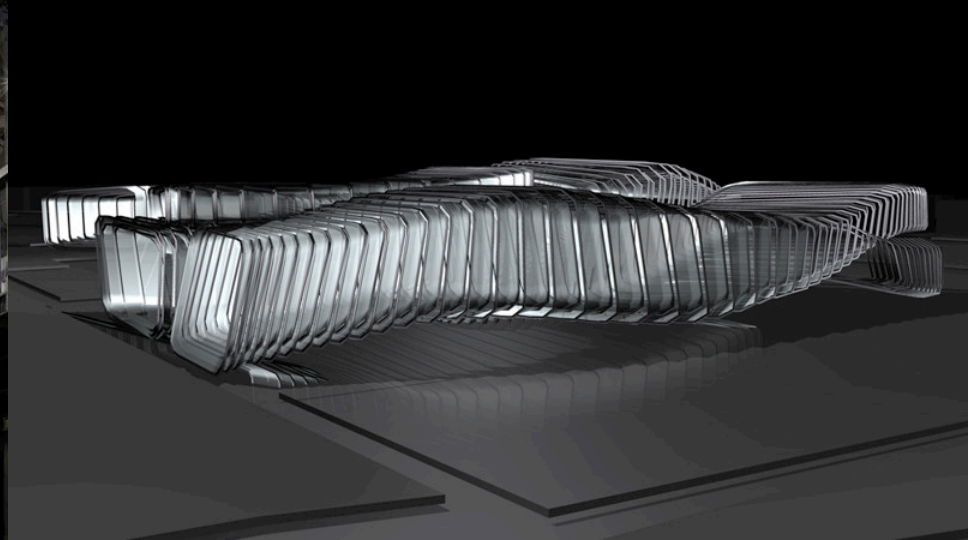
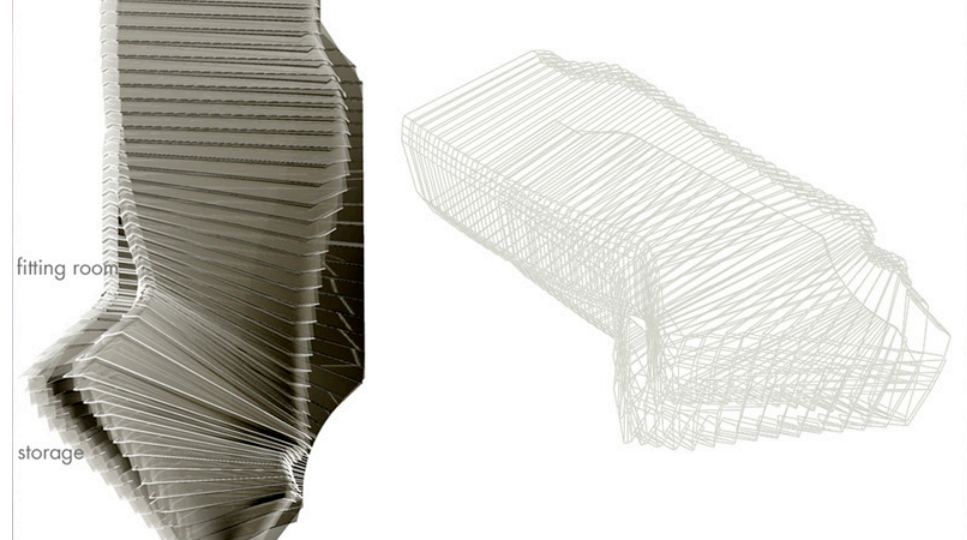
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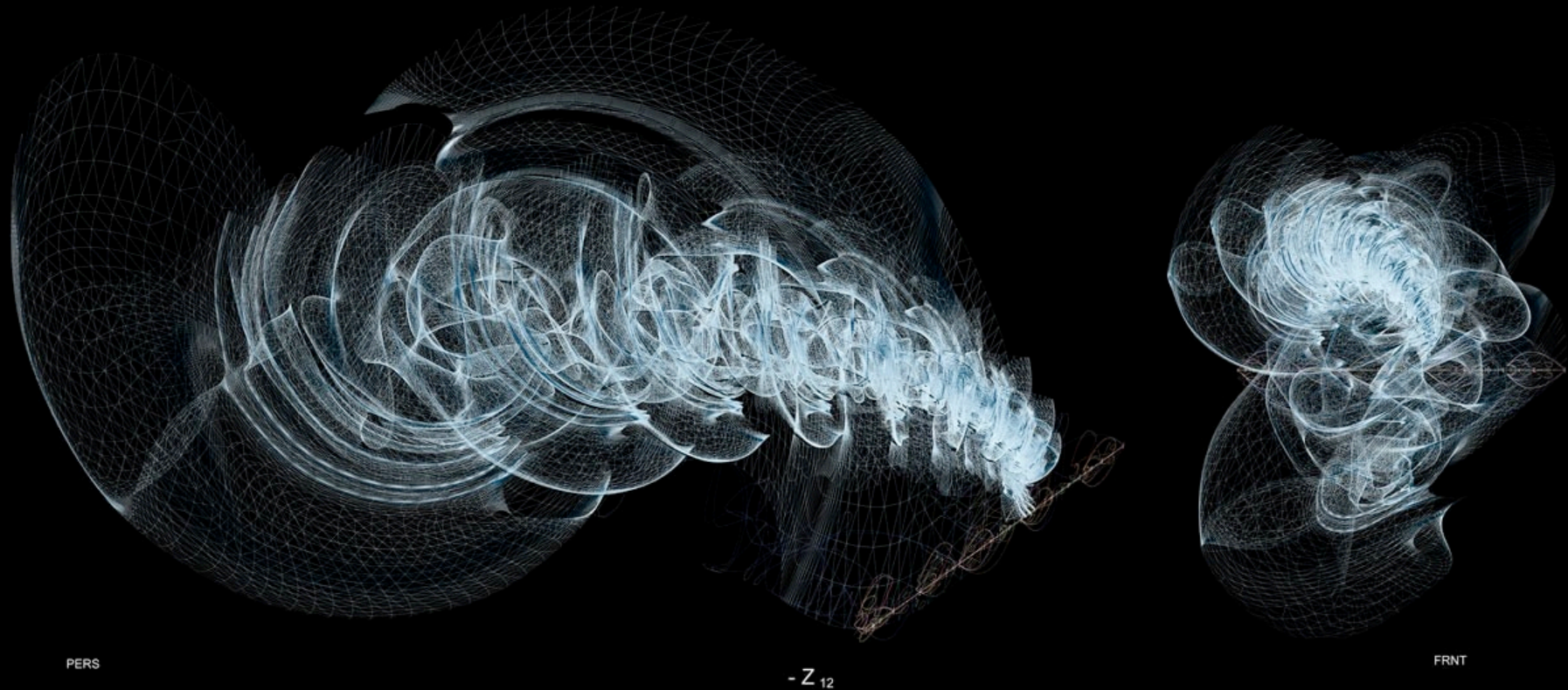


Greg Lynn

https://www.ted.com/talks/greg_lynn_organic_algorithms_in_architecture

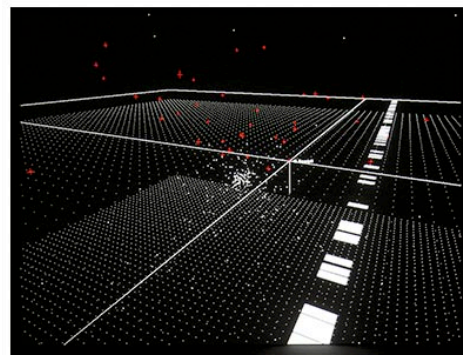
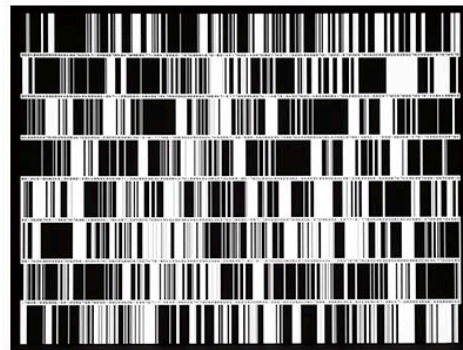
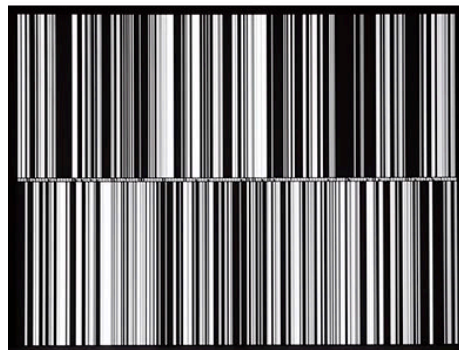
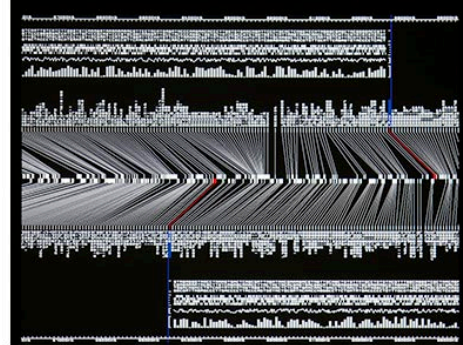
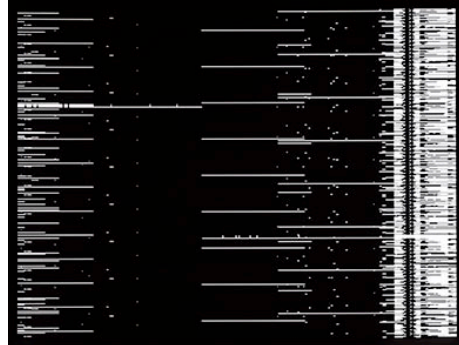


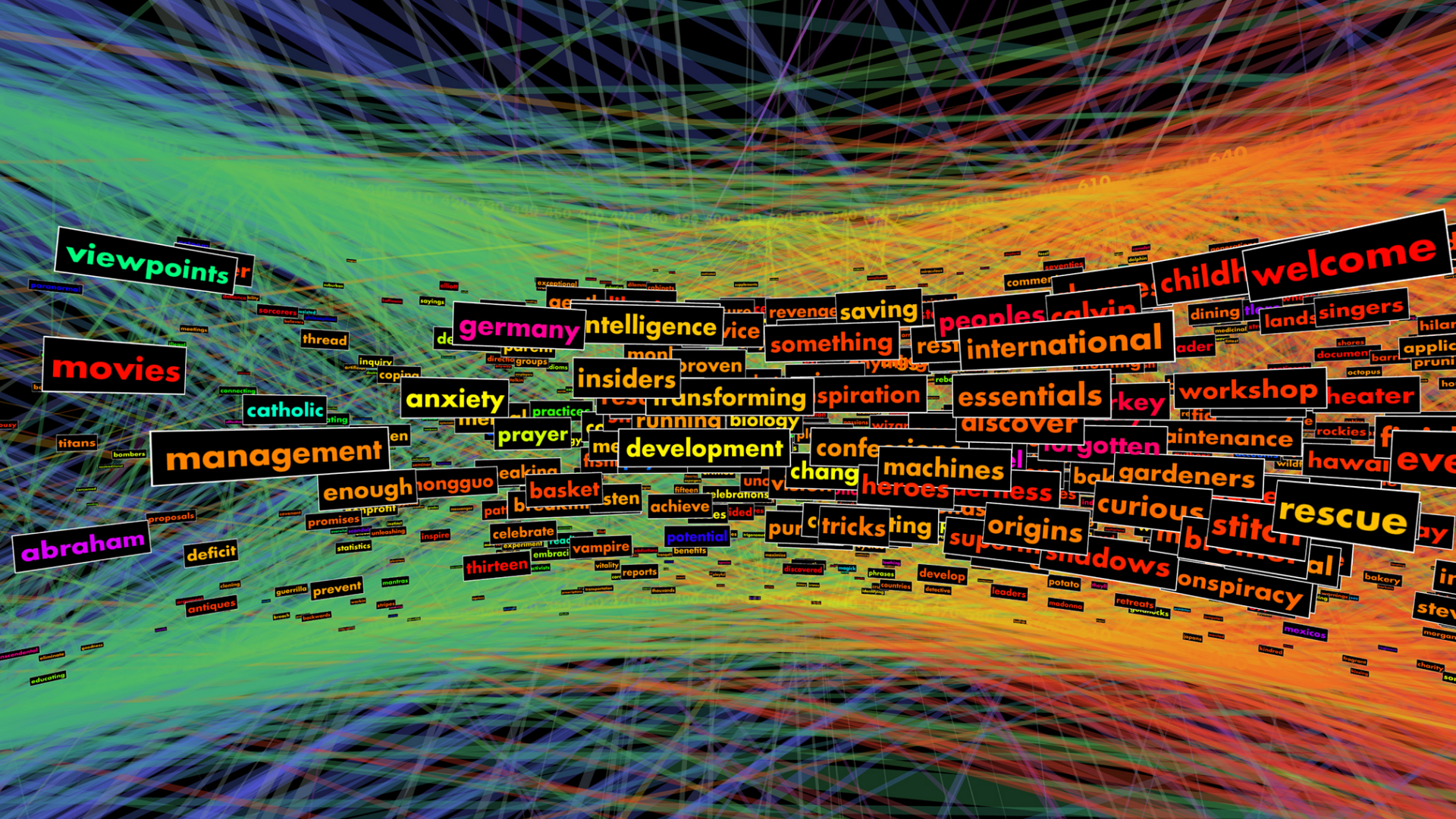


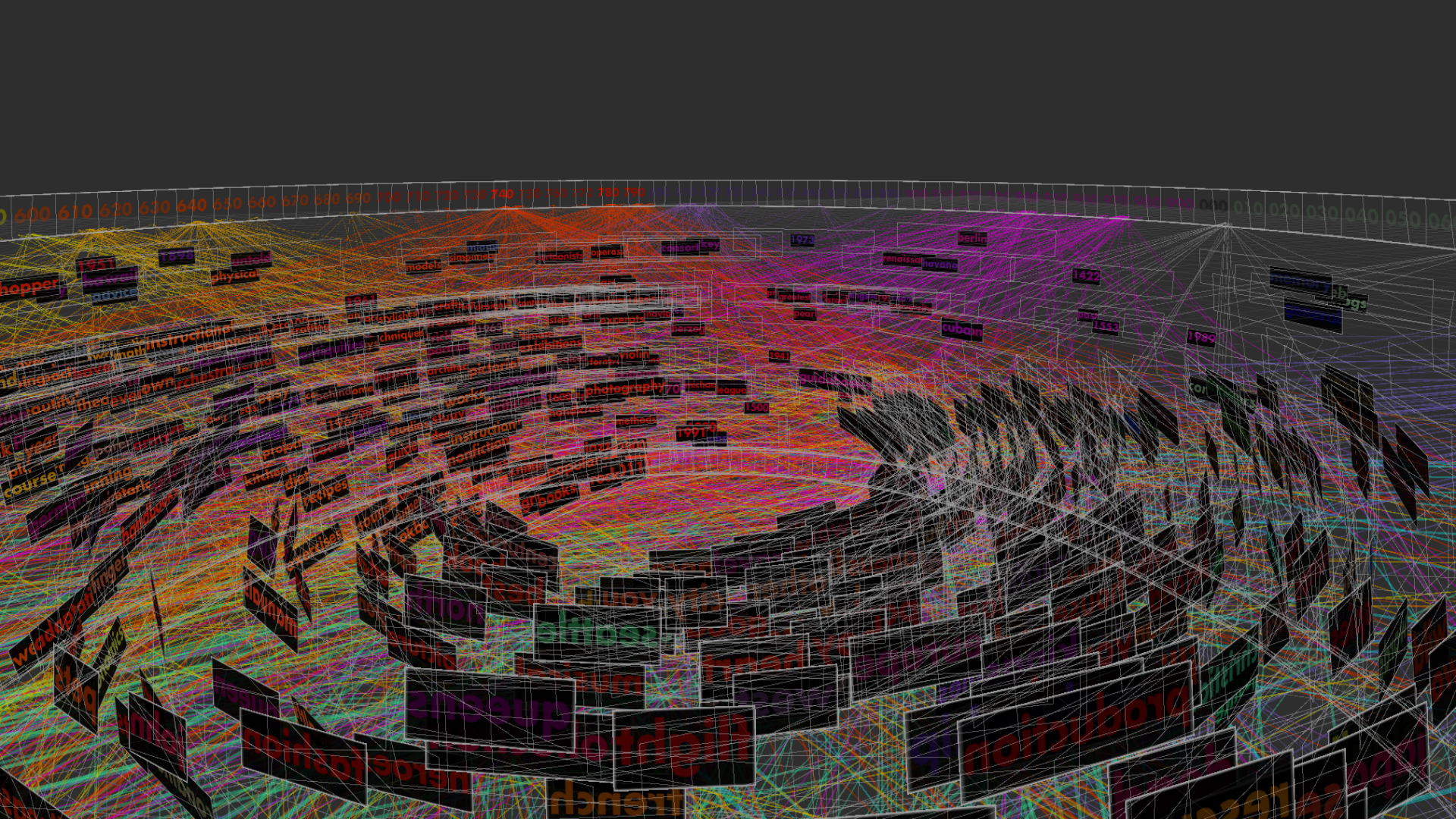


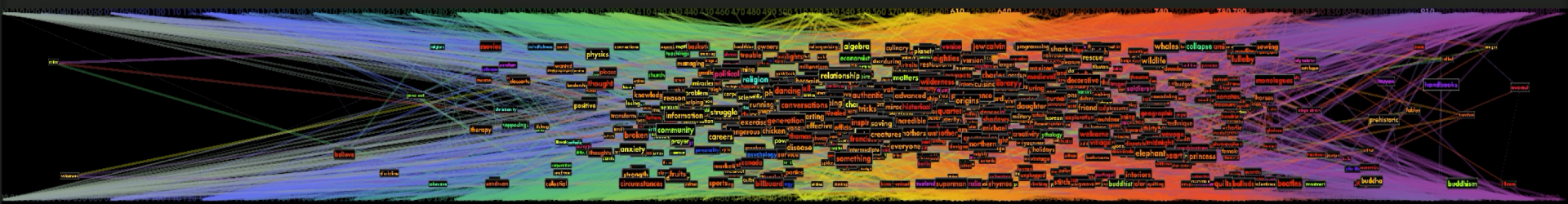
Rioji Ikeda

https://vimeo.com/62242278?embedded=true&source=vimeo_logo&owner=10759430









MAT 259: MySQL Knowledge Discovery in the SPL Database - The Interest in Race

Lara Floegel-Shetty

January 2021

1 Concept

For my project, I took interest in seeing if I could uncover a correlation between major events surrounding violence against people of color, or more specifically the black community, and the public's interest in the type of resources they check out of the library. I wanted to first take a general look at the check out counts of relevant materials to see if any trend appears before taking a closer look to see if any increases in the number of checkouts aligns with the dates of killings that made national headlines, protests, or transfer of powers between people in office. The question I ask is **Are the rising racial tensions during major controversial events reflected in the materials people check out from libraries?**

2 Process

As there is no general category in the Seattle Public Library that focuses solely on racism towards the black community, I had to take a bit of liberty in choosing what type of data I was looking for. I first looked at books that discussed topics similar to what I was interested in and found a list of popular books that centered around what I wanted. The source of the list can be found [here](#).

I then looked at common words amongst the books in the list and used them as key words to filter out a general collection of books from the SPL database. This does introduce the potential for books irrelevant to my topic or books discussing discrimination towards non blacks, but it is a bit difficult to only pick out relevant books without using much more meticulous methods. I then used those words to filter through the SPL database to obtain a general count of book checkouts throughout the years.

3 Query 1: Overview and Analysis

Query 1 provides a broader overview of the number of relevant resources checked out annually from 2006 to 2019. From an initial on look, there is an overall

■ Knowledge Discovery - Sandy Schoettler

Motivating Question:

Let's consider item popularity over time, by looking at the number of monthly checkouts. If an item is very popular for a short amount of time, it may have many monthly checkouts for a period of time, but then those checkouts may decrease significantly over time. On the other hand, some items may have a more sustained level of popularity, that is more consistent over time. These items might be books that students must check out for school, or commonplace items which could have significant demand for a prolonged period of time (like the *Harry Potter* series).

My goal was to explore the question, "*Which items have a consistent, sustained level of popularity?*" In measurable terms, I decided to look for items with a low variance in the number of monthly checkouts. Noticing the possibility for untouched items to score highly here, I decided to also measure the average number of monthly checkouts, restricting results to those with at least somewhat significant popularity.

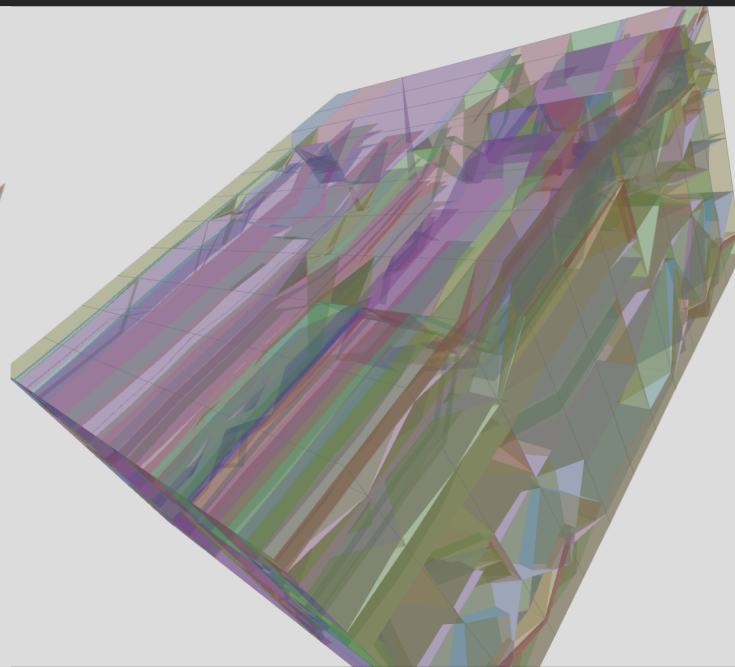
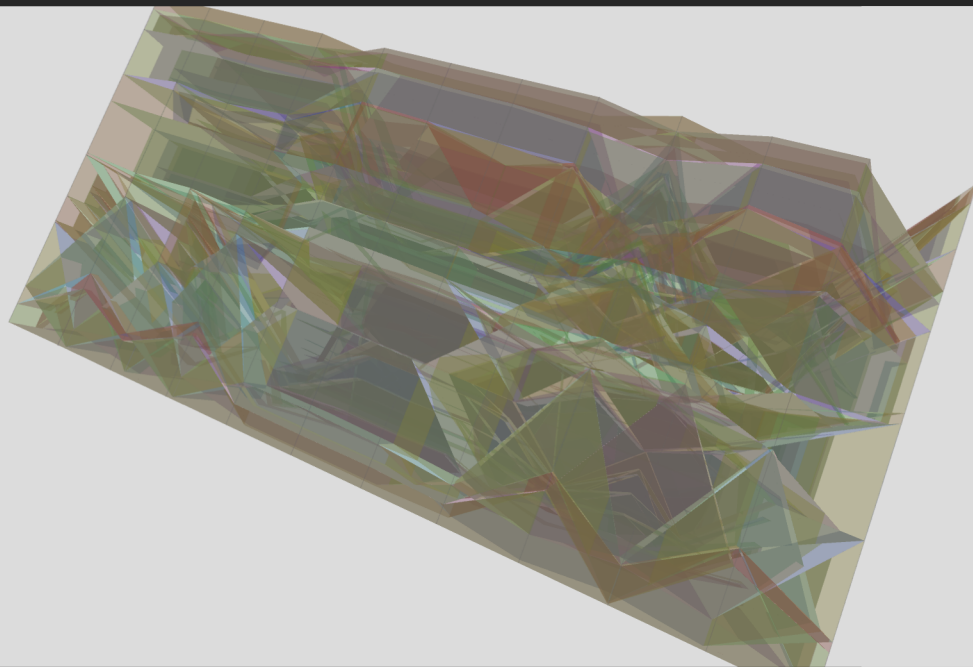
SQL Query

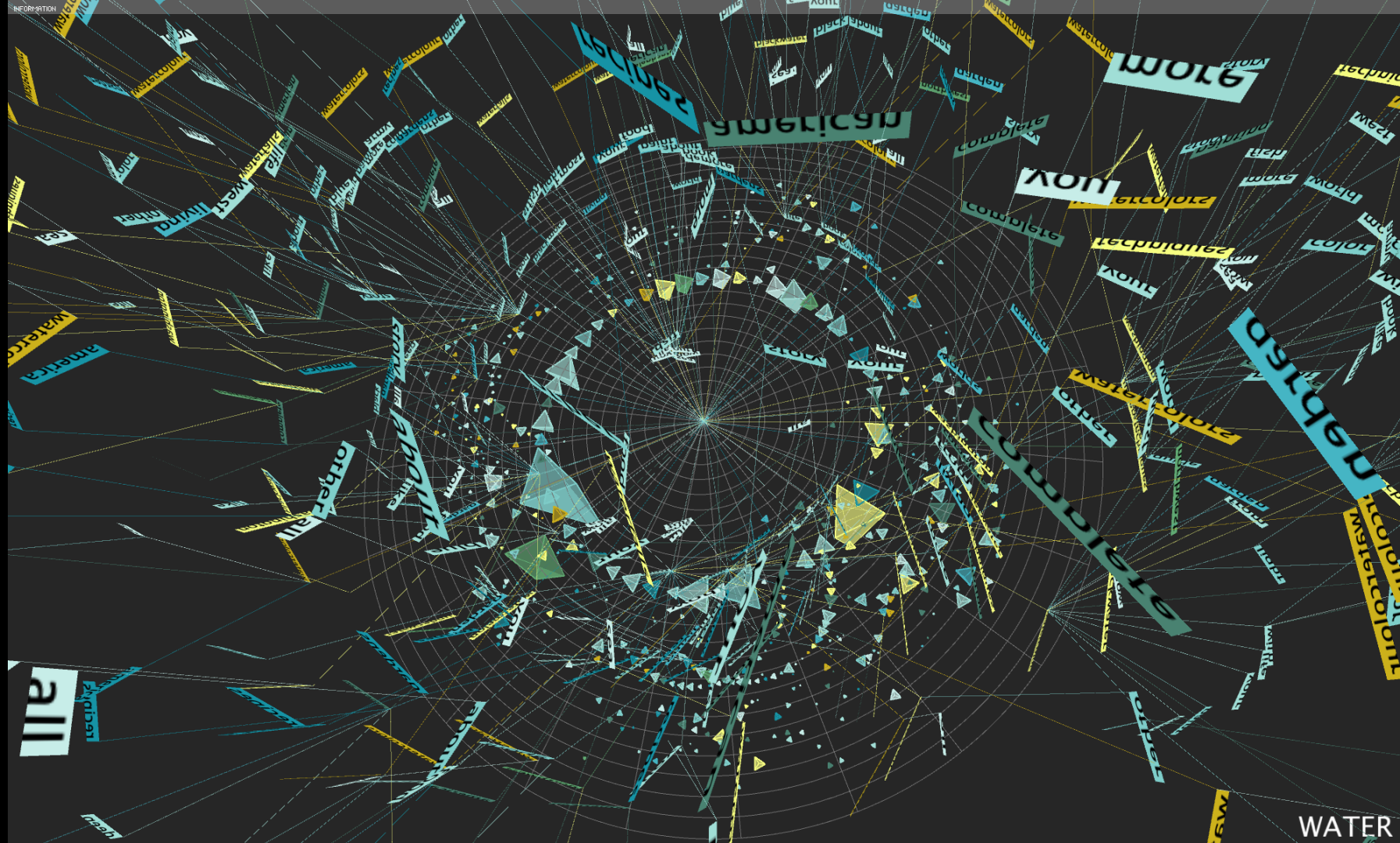
```
SELECT
    itemNumber, AVG(`count`), VARIANCE(`count`)
FROM
    (SELECT
        itemNumber, MONTH(checkOut) AS month, COUNT(*) AS `count`
    FROM
        spl_2016.transactions
    WHERE
        '2016-01-01' <= checkOut
        AND checkOut <= '2016-12-30'
    GROUP BY itemNumber , month) AS checkout_counts
GROUP BY itemNumber
```

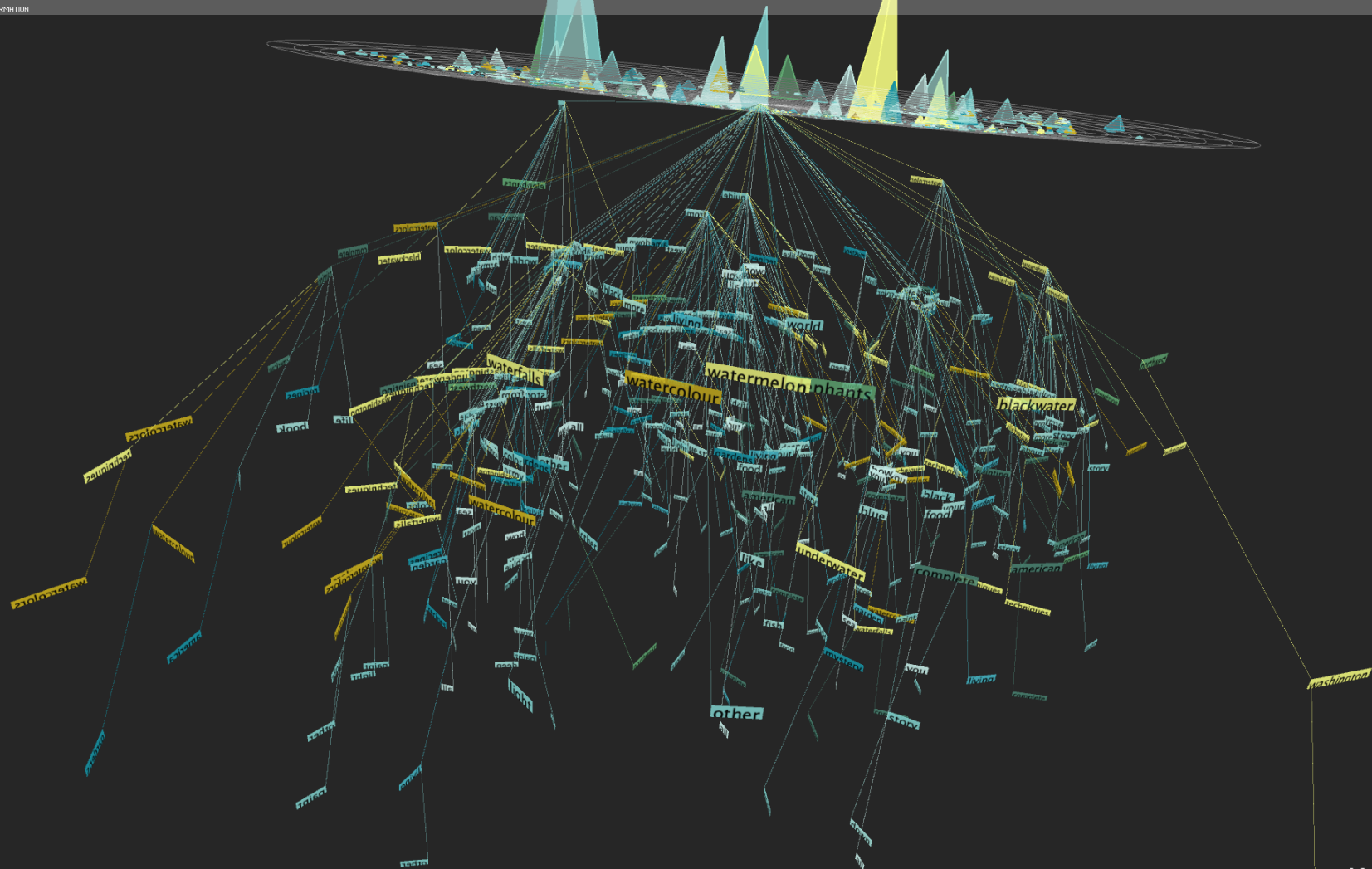
Difficulties

The SQL query I originally wanted to make, over the entire database, would've taken too long to compute. I tried downloading the `spl_2016.transactions` table, with the intention of launching a Docker container on my own machine to host a PostgreSQL server which could compute the query locally. I wasn't able to get this to work with the time I had, but it may be useful for my next project idea so I am hopeful and expectant that I can get it up and running soon.

For this project I was able to retrieve the data I was interested in for 50,000 items checked out in 2016.









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Ph.D. (1985), Computer Science, Univ. Wisconsin-Madison

Knowledge Discovery and Data Mining, Database Systems

[Data Mining Research Group](#)
[Data and Information Systems Research Laboratory](#)
UIUC Calendar: [\(19-20\)](#) [\(Cites: Exchange\)](#) [\(CS\)](#)
Office: (217) 333-6903
Fax: (217) 265-6494
Web: hanj.cs.illinois.edu
[Schedule: Meetings and Appointments](#)

● Current Research ([Selected Publications](#))

- [StructNet: Constructing and Mining Structure-Rich Information Networks for Scientific Research \(NSF/IIS\)](#)
- [Taming Big Networks via Embedding \(NSF/IIS-BIGDATA\)](#)
- [Mining and Leveraging Knowledge Hypercubes for Complex Applications \(NSF-IIS\)](#)
- [NSF AI Institute for Molecular Discovery, Synthetic Strategy, and Manufacturing: Molecule Maker Lab Institute](#)
- [DARPA/KAIS: "RESIN: Reasoning about Event Schemas for Induction of Knowledge"](#)
- [DARPA/INCAS: "Analytics of Information Influence: Effect Characterization"](#)

● Teaching

- [UIUC CS412: An Introduction to Data Warehousing and Data Mining](#), (offered only online every Spring semester: For on-campus offerings, please contact the department)
- [UIUC CS512: Data Mining: Principles and Algorithms](#) 9:30-10:45am Tues/Thurs. 0216 Siebel Center (every Spring semester)
- Data Mining Research Group Meeting, **Mondays** @ Siebel Center (for DMG group member only)

● Books

- Jiawei Han, Micheline Kamber, and Jian Pei, [Data Mining: Concepts and Techniques, 3rd edition](#), Morgan Kaufmann, 2011. ([1st ed., 2000](#)) ([2nd ed., 2006](#))
- Chao Zhang and Jiawei Han, [Multidimensional Mining of Massive Text Data](#), Morgan & Claypool Publishers, 2019 (Series: Synthesis Lectures on Data Mining and Knowledge Discovery)
- Xiang Ren and Jiawei Han, [Mining Structures of Factual Knowledge from Text: An Effort-Light Approach](#), Morgan & Claypool Publishers, 2018 (Series: Synthesis Lectures on Data Mining and Knowledge Discovery)
- Jialu Liu, Jingbo Shang and Jiawei Han, [Phrase Mining from Massive Text and Its Applications](#), Morgan & Claypool Publishers, 2017 (Series: Synthesis Lectures on Data Mining and Knowledge Discovery)
- Chi Wang and Jiawei Han, [Mining Latent Entity Structures](#), Morgan & Claypool Publishers, 2015 (Series: Synthesis Lectures on Data Mining and Knowledge Discovery)
- Yizhou Sun and Jiawei Han, [Mining Heterogeneous Information Networks: Principles and Methodologies](#), Morgan & Claypool Publishers, 2012 (Series: Synthesis Lectures on Data Mining and Knowledge Discovery)
- Manish Gupta, Jing Gao, Charu Aggarwal, and Jiawei Han, [Outlier Detection for Temporal Data](#), Morgan & Claypool Publishers, 2014 (Series: Synthesis Lectures on Data Mining and Knowledge Discovery)

 Categories

Choreos

Public

Private



- ▶ 23andMe
- ▶ Amazon
- ▶ AuthorizeNet
- ▶ Basecamp
- ▶ Bitly
- ▶ Box
- ▶ Clicky
- ▶ CloudMine
- ▶ ConstantContact
- ▶ CorpWatch
- ▶ DailyMed
- ▶ DarkSky
- ▶ DataGov
- ▶ Disqus
- ▶ DonorsChoose
- ▶ Dropbox
- ▶ DuckDuckGo
- ▶ Dwolla
- ▶ eBay
- ▶ EnviroFacts
- ▶ Facebook
- ▶ Factual
- ▶ FedEx
- ▶ FilesAnywhere
- ▶ Fitbit

23andMe

Wonder about your genetic heritage? 23andMe is a DNA analysis service that provides information and tools for people to learn about their DNA, and they have the world's first Genome API. This bundle allows your app to have access to over a million SNPs, base-pairs associated with SNPs, maternal and paternal haplogroups, and user account info.

▼ SETUP INSTRUCTIONS

To use the Choreos in this bundle:





- [Apply](#)  for a 23AndMe developer account, and register your app.
- 23AndMe will then provide you with an Client ID and Client Secret. Use these to retrieve an Access Token by following the OAuth2 process described [here](#) .

▼ GLOSSARY

SNP

Single-nucleotide polymorphism (pronounced "snip" or "snips" for plural) is a DNA sequence variation that exists when a single nucleotide in a genome differs between members of a species or paired chromosomes in an individual. These variations in human DNA can used to study relationships between people.

▼ RELATED LINKS

[Authenticating with the API](#) 
[API Reference](#) 
[23andMe API Terms of Service](#) 
[23andMe Privacy Statement](#) 

▼ CHOREOS

Ancestry

Retrieves the ancestral breakdown for the user's profiles.

Genomes

Retrieves the entire profile's genome as a string of base pairs.

Genotype

For each of the user's profiles, retrieves the base-pairs for given locations.



Climate Data Online: Dataset Discovery

Click on each dataset name to expand and view more details. Information generally includes a description of each dataset, links to related tools, FTP access, and downloadable samples.

Climate Data Online

The datasets listed in this section are accessible within the Climate Data Online search interface.

☐ Daily Summaries

Global Historical Climate Network includes daily land surface observations from around the world. The GHCN-Daily was developed to meet the needs of climate analysis and monitoring studies that require data at a sub-monthly time resolution (e.g., assessments of the frequency of heavy rainfall, heat wave duration, etc.). The dataset includes observations from World Meteorological Organization, Cooperative, and CoCoRaHS networks. If observed, the station dataset includes max and minimum temperatures, total precipitation, snowfall, and depth of snow on ground. Some U.S. station data are typically delayed only 24 hours. [More »](#)

■ Search Tool ■ Mapping Tool ■ FTP

- ☐ Global Marine Data
- ☐ Global Summary of the Month
- ☐ Global Summary of the Year
- ☐ Local Climatological Data
- ☐ Normals Annual/Seasonal
- ☐ Normals Daily
- ☐ Normals Hourly
- ☐ Normals Monthly
- ☐ Precipitation 15 Minute
- ☐ Precipitation Hourly
- ☐ Weather Radar (Level II)
- ☐ Weather Radar (Level III)

Documentation & Samples ▾

- 📄 Documentation ▴
- 📄 Data Sample ▴
- 📄 Data Sample ▴
- 📄 Data Sample ▴

Help

Links to help, documentation and assistance with accessing and using web services.

[Climate Data Online help](#)
[Climate Data Online Web Services](#)
[NCDC Web Services](#)

https://www.nceas.ucsb.edu/data-science/tools

Data Repositories

Store, search, and access environmental data



General Environmental Data

DataONE

Search for environmental data within the federation of DataONE, an international network of environmental data repositories.

KNB Data Repository

Access thousands of environmental datasets through the Knowledge Network for Biocomplexity (KNB), a national network that facilitates ecological and environmental research.

Topic-Specific Data

Arctic Data Center

A data and software repository for Arctic research, especially that associated with the National Science Foundation's Polar Program.

Botanical Information and Ecology Network (BIEN)

Datasets and cyberinfrastructure for botanical research across North and South America.

Global Population Dynamics Database

An extensive collection of time series data from plant and animal populations.

Interaction Web Database

Data concerning ecological interactions, particularly pollination/pollinator relationships.

Paleobiology Database

Fossil information that includes 52,000 collection records and 511,889 taxonomic occurrences from 13,962 published references.

Vegbank

The vegetation plot database of the Ecological Society of America's Panel on Vegetation Classification.

Site-Specific Data

GulfWatch Alaska

Datasets from 25 years of research following the Exxon Valdez oil spill in Prince William Sound, Alaska.

OBFS Data Registry (Organization of Biological Field Stations)

The primary source for comprehensive information about scientific and research datasets collected within or under the auspices of the Organization of Biological Field Stations.

SANParks Data Repository (South African National Park)

The primary source for comprehensive information about scientific and research data sets collected throughout the South African National Park System.

UC Natural Reserve System Data Registry





















The primary source for comprehensive information about scientific and research datasets collected

Maps & Data

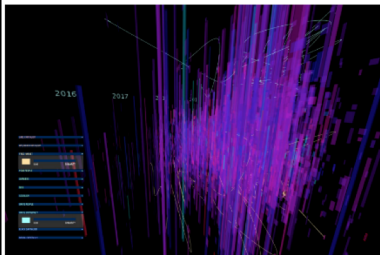
[home](#) >

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Powered by Google Tr

Learn about the data that can be accessed from Tracking California by visiting our [Publicly Available Data](#) page.

 AIR QUALITY	 ASTHMA	 BIRTH DEFECTS	 CANCER	 CARBON MONOXIDE POISONING	 CHILDHOOD LEAD POISONING	 CLIMATE CHANGE	 COPD
 COVID-19	 ENVIRONMENTAL JUSTICE	 HEART ATTACKS	 HABS	 HEALTHY HOMES	 HEAT RELATED ILLNESS	 MATERNAL AND INFANT HEALTH	 PESTICIDES
 PFAS	 SICKLE CELL DISEASE	 WATER QUALITY	 WATER SYSTEMS				

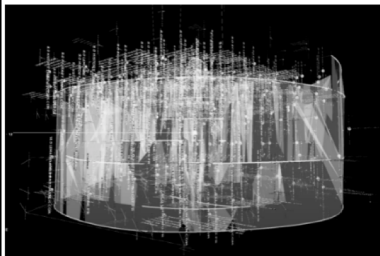
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7/17/21 1:28:01 PM	F	86.158	7/17/21 1:28:01 PM	%RH	26.899	7/17/21 2:40:01 PM	F	91.623	8/7/21 1:20:01 PM	%RH	53.698
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7/17/21 3:28:01 PM	F	76.261	7/17/21 3:28:01 PM	%RH	61.658	7/17/21 4:40:01 PM	F	70.932	8/7/21 3:20:01 PM	%RH	55.568
7/17/21 4:28:01 PM	F	73.356	7/17/21 4:28:01 PM	%RH	67.584	7/17/21 5:40:01 PM	F	69.13	8/7/21 4:20:01 PM	%RH	62.293
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7/17/21 6:28:01 PM	F	69.958	7/17/21 6:28:01 PM	%RH	72.78	7/17/21 7:40:01 PM	F	67.328	8/7/21 6:20:01 PM	%RH	74.542
7/17/21 7:28:01 PM	F	68.156	7/17/21 7:28:01 PM	%RH	77.291	7/17/21 8:40:01 PM	F	66.426	8/7/21 7:20:01 PM	%RH	79.555
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7/18/21 4:28:01 AM	F	64.551	7/18/21 4:28:01 AM	%RH	89.688	7/18/21 5:40:01 AM	F	63.722	8/8/21 4:20:01 AM	%RH	90.699
7/18/21 5:28:01 AM	F	64.551	7/18/21 5:28:01 AM	%RH	90.726	7/18/21 6:40:01 AM	F	64.623	8/8/21 5:20:01 AM	%RH	91.211
7/18/21 6:28:01 AM	F	64.551	7/18/21 6:28:01 AM	%RH	90.726	7/18/21 7:40:01 AM	F	65.525	8/8/21 6:20:01 AM	%RH	91.211
7/18/21 7:28:01 AM	F	67.255	7/18/21 7:28:01 AM	%RH	83.864	7/18/21 8:40:01 AM	F	67.328	8/8/21 7:20:01 AM	%RH	89.671
7/18/21 8:28:01 AM	F	69.958	7/18/21 8:28:01 AM	%RH	78.956	7/18/21 9:40:01 AM	F	67.328	8/8/21 8:20:01 AM	%RH	86.018
7/18/21 9:28:01 AM	F	69.057	7/18/21 9:28:01 AM	%RH	82.243	7/18/21 10:40:01 AM	F	69.13	8/8/21 9:20:01 AM	%RH	79.005
7/18/21 10:28:01 AM	F	76.261	7/18/21 10:28:01 AM	%RH	69.33	7/18/21 11:40:01 AM	F	72.734	8/8/21 10:20:01 AM	%RH	73.976
7/18/21 11:28:01 AM	F	78.062	7/18/21 11:28:01 AM	%RH	59.85	7/18/21 12:40:01 PM	F	72.734	8/8/21 11:20:01 AM	%RH	65.872
7/18/21 12:28:01 PM	F	78.962	7/18/21 12:28:01 PM	%RH	56.189	7/18/21 1:40:01 PM	F	72.734	8/8/21 12:20:01 PM	%RH	64.09
7/18/21 1:28:01 PM	F	77.162	7/18/21 1:28:01 PM	%RH	62.258	7/18/21 2:40:01 PM	F	73.635	8/8/21 1:20:01 PM	%RH	54.947
7/18/21 2:28:01 PM	F	78.062	7/18/21 2:28:01 PM	%RH	56.803	7/18/21 3:40:01 PM	F	73.635	8/8/21 2:20:01 PM	%RH	51.179
7/18/21 3:28:01 PM	F	77.162	7/18/21 3:28:01 PM	%RH	61.658	7/18/21 4:40:01 PM	F	71.833	8/8/21 3:20:01 PM	%RH	53.07
7/18/21 4:28:01 PM	F	75.361	7/18/21 4:28:01 PM	%RH	64.048	7/18/21 5:40:01 PM	F	70.932	8/8/21 4:20:01 PM	%RH	58.651
7/18/21 5:28:01 PM	F	73.356	7/18/21 5:28:01 PM	%RH	66.999	7/18/21 6:40:01 PM	F	70.932	8/8/21 5:20:01 PM	%RH	66.462
7/18/21 6:28:01 PM	F	72.66	7/18/21 6:28:01 PM	%RH	68.75	7/18/21 7:40:01 PM	F	69.13	8/8/21 6:20:01 PM	%RH	72.269
7/18/21 7:28:01 PM	F	69.958	7/18/21 7:28:01 PM	%RH	75.611	7/18/21 8:40:01 PM	F	68.229	8/8/21 7:20:01 PM	%RH	80.103
7/18/21 8:28:01 PM	F	68.156	7/18/21 8:28:01 PM	%RH	77.847	7/18/21 9:40:01 PM	F	67.328	8/8/21 8:20:01 PM	%RH	83.891
7/18/21 9:28:01 PM	F	67.255	7/18/21 9:28:01 PM	%RH	82.785	7/18/21 10:40:01 PM	F	67.328	8/8/21 9:20:01 PM	%RH	87.07
7/18/21 10:28:01 PM	F	67.255	7/18/21 10:28:01 PM	%RH	83.864	7/18/21 11:40:01 PM	F	67.328	8/8/21 10:20:01 PM	%RH	88.116
7/18/21 11:28:01 PM	F	66.353	7/18/21 11:28:01 PM	%RH	86.004	7/19/21 12:40:01 AM	F	66.426	8/8/21 11:20:01 PM	%RH	89.154
7/19/21 12:28:01 AM	F	67.255	7/19/21 12:28:01 AM	%RH	86.536	7/19/21 1:40:01 AM	F	66.426	8/9/21 12:20:01 AM	%RH	89.154
7/19/21 1:28:01 AM	F	66.353	7/19/21 1:28:01 AM	%RH	87.065	7/19/21 2:40:01 AM	F	66.426	8/9/21 1:20:01 AM	%RH	89.154
7/19/21 2:28:01 AM	F	66.353	7/19/21 2:28:01 AM	%RH	88.119	7/19/21 3:40:01 AM	F	66.426	8/9/21 2:20:01 AM	%RH	88.636
7/19/21 3:28:01 AM	F	66.353	7/19/21 3:28:01 AM	%RH	89.167	7/19/21 4:40:01 AM	F	65.525	8/9/21 3:20:01 AM	%RH	87.594



M259 Projects Data Visualization

2021

SP, data, capitalism and socialism, violence against people of color, anti-racist literature, armed conflicts in the Middle East and Northern Africa, astronomy constellations, Dewey classes, popular words, music CD checkouts, microdata, Twitter language about capitalism, etc.



M259 Projects Data Visualization

2018

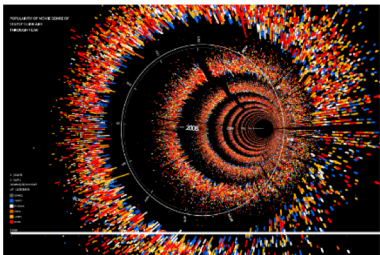
SP, data, particle visualization of movies, travel books, supply & demand, spherical harmonics, StarWars, Ind Rock Vs Soul, global hazards, NYC taxi data, TED text mining, endangered species trade, EUR/US rate, etc.



M259 Projects Data Visualization

2018

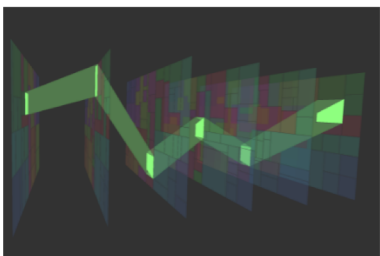
SP, data, urban agriculture, Restricted Brethren: Machine, mapping continuities, diurnal and seasonal cycles, rollers, checkouts & weather, financial crisis, render matrix, Gullies logic tree, spatial temporal, & means clustering, autobiography, spider diagram, financial market chaos, etc.



M259 Projects Data Visualization

2020

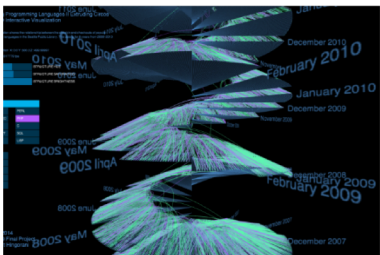
SP, data, predictive analysis, COVID-19, spatial memory in virtual maze, Volga Germans, SF Election Rates and gentrification, popularity of Bilibili, game sales, Air BnB, 2018 presidential election data, etc.



M259 Projects Data Visualization

2017

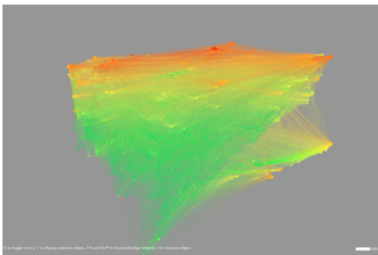
SP, data, text and forgotten books, high-school classics, Michael Jackson, title-length to checkout-length, correlate weather data with library checkouts, MALLET topic modeling, Crunchbase trends, Wikigraph, space-time path, Washington DC bike circulation, Reddit image data, European Power Exchange, etc.



M259 Projects Data Visualization

2016

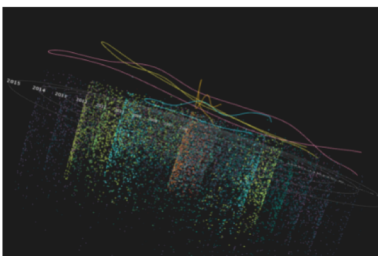
SP, data, Ukraine conflict, barcode anomalies, multi-dimensional scaling, 2D spatial treemap, checkout variance, Manga suffixes, etc.



M259 Projects Data Visualization

2019

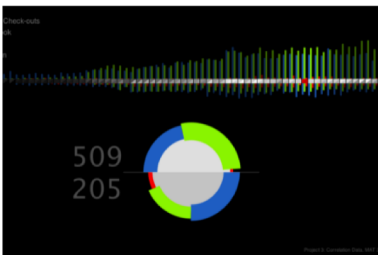
SP, data, Fan Shu prevalence, statistics in cooking, query variances, travel segregation, Behance, Foreign news at BPL, US lighting attacks, Hate groups, Health in countries, etc.



M259 Projects Data Visualization

2018

SP, data, acquisition frequency, David Bowie over time, banned films, film adaptation, shared isbn-number, logram analysis, seven deadly sins, travel, wars, global warming, occurrence of plant bugs, Instagram data, BAP 508, aggregate hard movement, EXOP global tracking, etc.



M259 Projects Data Visualization

2019

SP, data, Twitter, Facebook correlation, top six Seattle foods, NYTimes/SP, data, Jane Austin statistics, global travel, etc.

Experimental Visualization Lab

The Experimental Visualization Lab is one of 8 dedicated research labs in the Media Arts & Technology art-engineering program located on the 2nd Floor of Elings Hall (California Nanosystems Institute) at the University of California, Santa Barbara.

The lab focuses on creative explorations in the fields of data visualization, visual language, machine vision, computational photography, interactive digital installations and related directions to explore the intersections of computation and visualization in both the arts and engineering.

The lab is directed by Professor George Legrady, an internationally exhibited, multi-disciplinary artist and scholar with projects realized in interactive digital media installations, and computationally generated data and photographic-based visualizations. He is former chair (2013-2017) of the Media Arts & Technology program, and is affiliated on campus with the Department of Art, the Data Science Initiative, the Center for Digital Games Research, and the Center for Information Technology and Society. Legrady is a Ruggenstein Fellow with research funded by the Creative Capital Foundation, National Science Foundation, Robert W Deutsch Foundation, the Center for Nanotechnology in Society at UCSB, and others.

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