Nik Bear Brown
Research Projects

Topics

What is research?

“Scientific” paper structure

Project proposals

Project ideas?

What is research? Original Research

- Identify a problem
- Find out what others have done
- Develop a solution/twist/variant
- Test your solution:
  - Works Better?
  - Interesting somehow?

Suggested Organization of a Research Paper

- Abstract/Thesis
- Introduction:

I. Motivation
II. Background
III. My solution/idea

- Methods
- Results
- Discussion
- References

Step 1: Choose your topic.

- If at all possible, choose a subject or an aspect of a subject that interests you
- Narrow down the topic.
- Have FUN!!!!!!!!!!!!

Step 2: Gather materials.

- Have a focus for your paper: a question that you want to answer -- e.g.,
- “How can evalaute what people like on Twitter?”
- “Can I predict disease from gene expression?”
  - Note: this is not yet a thesis. A thesis would be a tentative *answer* to this question
- Put together a bibliography
  - Professors will often require this (like me!!!)

Step 3: Keep Track of your Sources.

- You can use EndNote or other citation software
- Use your own words when possible; avoid excessive use of long quotations

Step 4: Decide on a Thesis.

- A thesis is a statement that states an argument or makes an assertion.
  - It is a statement that someone could disagree with!
  - *This thesis is tentative*; you will probably need to revise it between the first and the final draft
- You don't have a thesis if you say
  - "This paper is *about* . . ." or
  - "This paper will *discuss the question* . . ."
- If a thesis is a hypothesis, or theory then it must be falsifiable or refutable.

Thesis Statement

- Thesis Statement – A one sentence summary of the paper which must appear in the first paragraph. This will guide your entire paper, so it must be direct, clear, and logical.

Converting a Topic to a Thesis

A thesis statement makes an assertion and provides evidence for that assertion.

A thesis statement describes your analysis. What you did.

What would a thesis related to creating GPS traces look like?

Three Main Parts

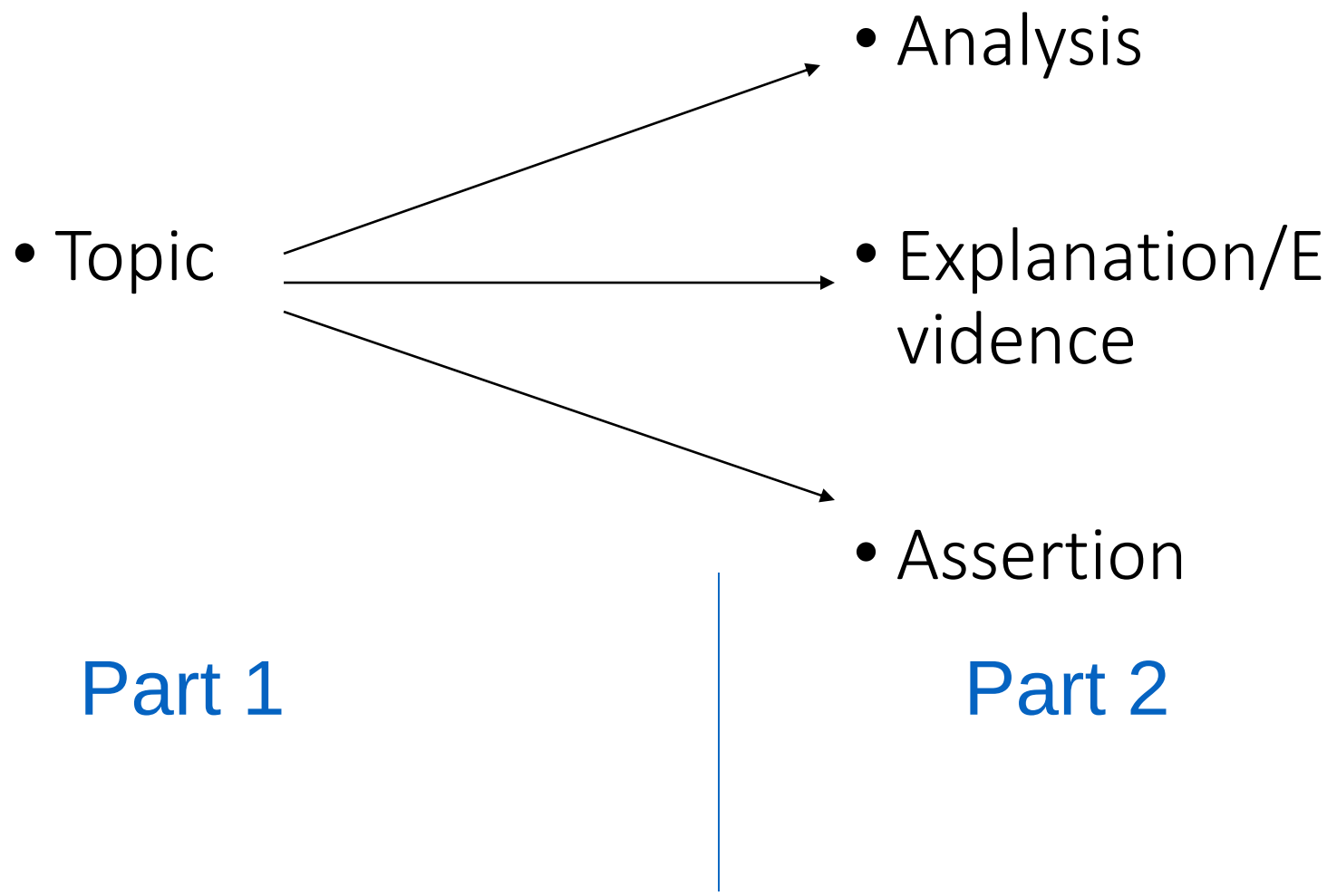
- A Thesis Statement generally consists of three main parts
  - Your topic, and then the analysis, explanation, or assertion, that you're making about the topic.
  - Based on evidence.

i. Topic/Assertion

ii. Analysis

iii. Points of Support/Evidence

Three Main Parts



The Don’ts of Thesis Statements

1. Write statements, not **Announcements**!

Examples of what not to do when starting an essay:

- The subject of this paper will be…
- I want to talk about …
- In this essay I want to express…
- My opinion of fast food restaurants is…
- This essay is about…
- I want to explain the…

Don’t do this! Ever! Bad…very bad!!

2. Avoid statements that are too **BROAD**!

Example – Men and women are very different.

3. Avoid statements that are too **NARROW**!

Example – In Canada, a person must be 18 yrs old in order to vote in the federal elections.

4. Write statements that contain **only ONE IDEA!**

Example - Group work has many advantages, but at the same time it brings many difficulties.

Data Sources

- Data and Story Library (DASL) (http://lib.stat.cmu.edu/DASL/)—An online library of data files and stories that illustrate the use of basic statistics methods, from Carnegie Mellon
  Berkeley Data Lab (http://sunsite3.berkeley.edu/wikis/datalab/)—Part of the University of California, Berkeley library system
  UCLA Statistics Data Sets (www.stat.ucla.edu/data/)—Some of the data that the UCLA Department of Statistics uses in their labs and assignments
  Freebase (www.freebase.com)—A community effort that mostly provides data on people, places, and things. It's like Wikipedia for data but more structured. Download data dumps or use it as a backend for your application.
  Infochimps (http://infochimps.org)—A data marketplace with free and for-sale datasets. You can also access some datasets via their API.
  Numbrary (http://numbrary.com)—Serves as a catalog for (mostly government) data on the web.
  AggData (http://aggdata.com)—Another repository of for-sale datasets, mostly focused on comprehensive lists of retail locations.
  Amazon Public Data Sets (http://aws.amazon.com/publicdatasets)—There's not a lot of growth here, but it does host some large scientific datasets.
  Wikipedia (http://wikipedia.org)—A lot of smaller datasets in the form of HTML tables on this community-run encyclopedia.
  TIGER (www.census.gov/geo/www/tiger/)—From the Census Bureau, probably the most extensive detailed data about roads, railroads, rivers, and ZIP codes you can find
  OpenStreetMap (www.openstreetmap.org/)—One of the best examples of data and community effort
  Geocommons (www.geocommons.com/)—Both data and a mapmaker
  Flickr Shapefiles (www.flickr.com/services/api/)—Geographic boundaries as defined by Flickr users
  Basketball Reference (www.basketball-reference.com/)—Provides data as specific as play-by-play for NBA games.
  Baseball DataBank (http://baseball-databank.org/)—Super basic site where you can download full datasets.
  databaseFootball (www.databasefootball.com/)—Browse data for NFL games by team, player, and season.
  Global Health Facts (www.globalhealthfacts.org/)—Health-related data about countries in the world.
  UNdata (http://data.un.org/)—Aggregator of world data from a variety of sources
  World Health Organization (www.who.int/research/en/)—Again, a variety of health-related datasets such as mortality and life expectancy
  OECD Statistics (http://stats.oecd.org/)—Major source for economic indicators
  World Bank (http://data.worldbank.org/)—Data for hundreds of indicators and developer-friendly
  Data.gov (http://data.gov/)—Catalog for data supplied by government organizations. Still relatively new, but has a lot of sources.
  Data.gov.uk (http://data.gov.uk/)—The Data.gov equivalent for the United Kingdom.
  DataSF (http://datasf.org/)—Data specific to San Francisco.
  NYC DataMine (http://nyc.gov/data/)—Just like the above, but for New York.
  Follow the Money (www.followthemoney.org/)—Big set of tools and datasets to investigate money in state politics.
  OpenSecrets (www.opensecrets.org/)—Also provides details on government spending and lobbying.
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“Scientific” paper structure

- Abstract (10 %)
- Introduction (5 %)
- Code with Documentation (50%)
- Results (20 %)
- Discussion (10 %)
- References (5 %)

Abstract/Thesis

- Thesis statement
- Summary of what was done
- Summary of the results

Introduction: Motivation

Why is this work interesting?

Is this work important?

Introduction: Background

- Information the reader will need to understand your paper (special definitions, symbols, etc.)
- Summary of what other researchers have done.
- No detail of previous work; cite the work in your references.

Introduction: My solution/idea

- Describe your idea/approach/twist at a high level (i.e. in the abstract)

Methods

- The details of your idea/approach/twist
- Think of recipes that would allow others to replicate your approach

Results

- Tables, figures and charts that evaluate the your methods
- Results should be only data. Not interpretation of the data.

Discussion

- Interpretation of the data/results
- Strengths/weaknesses of the approach
- Next steps/future work

References

- Citations of sources
- Any methods/background that you used but didn’t develop should be cited.
- Many standard citation formats. Many journals will require a specific citation formats.
- Assignment three will require APA Citation format. https://owl.english.purdue.edu/owl/resource/560/01/

Find a Topic

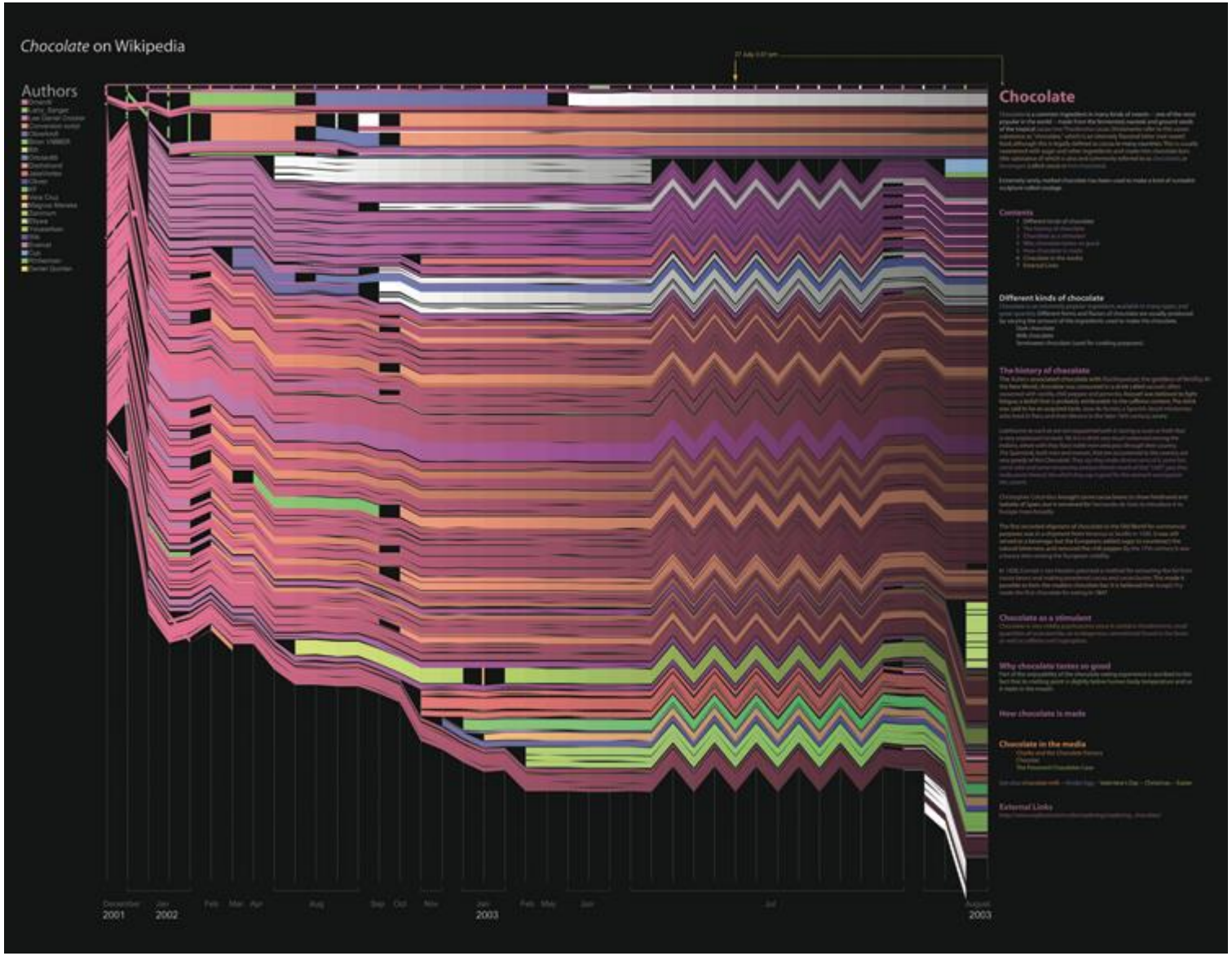
The Research Paper

ACM Digital Library http://dl.acm.org/

IEEE Xplore http://ieeexplore.ieee.org/Xplore/home.jsp

Google Scholar http://scholar.google.com/

History Flow – Cluster History?

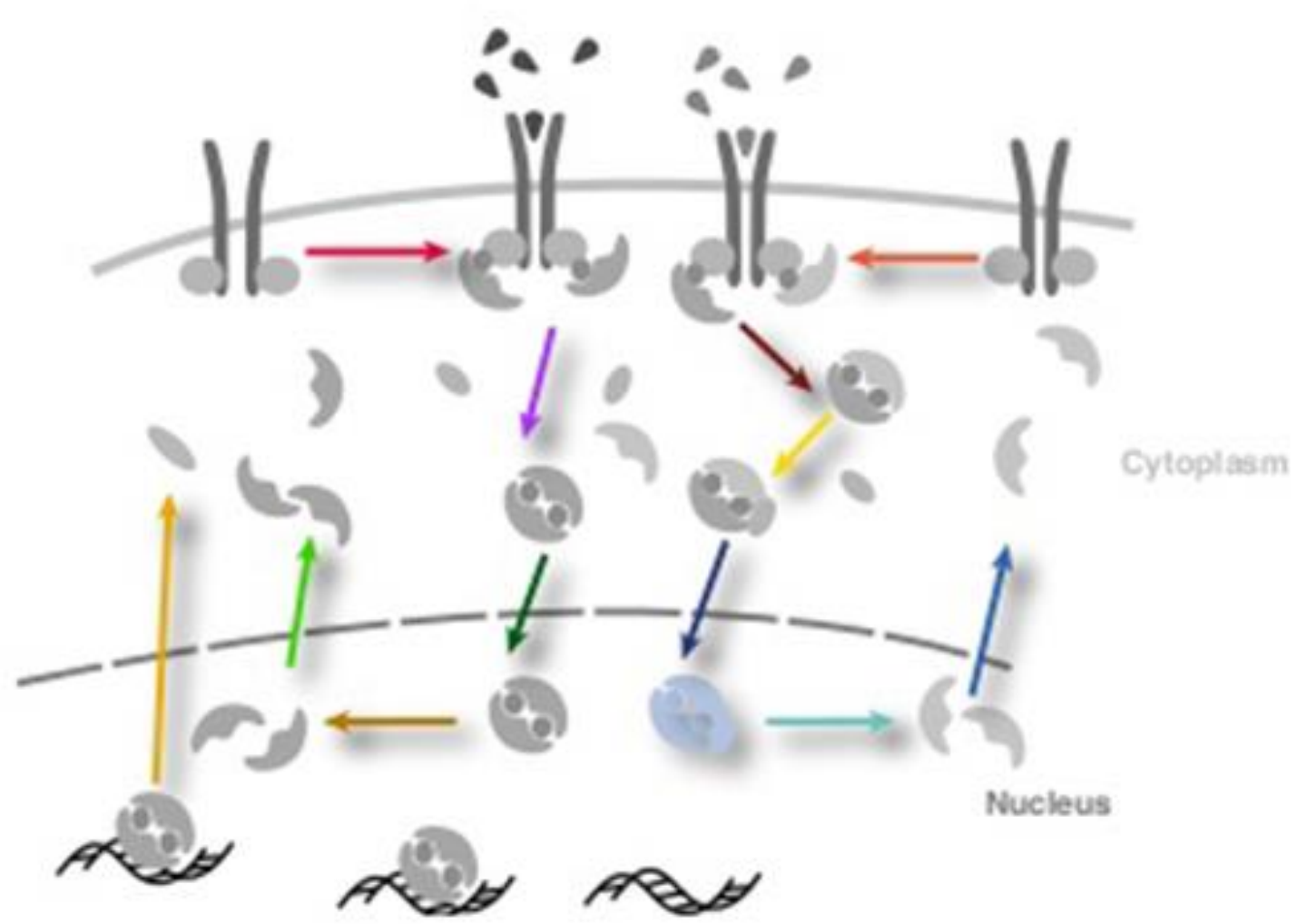


- History Flow (2003) by Fernanda Viégas and Martin Wattenberg, http://hint.fm

Pokemon Go “Alternate reality game” algorithms

- Pokemon Go Could Be A Huge Deal For Pocket Monsters https://youtu.be/2sj2iQyBTQs

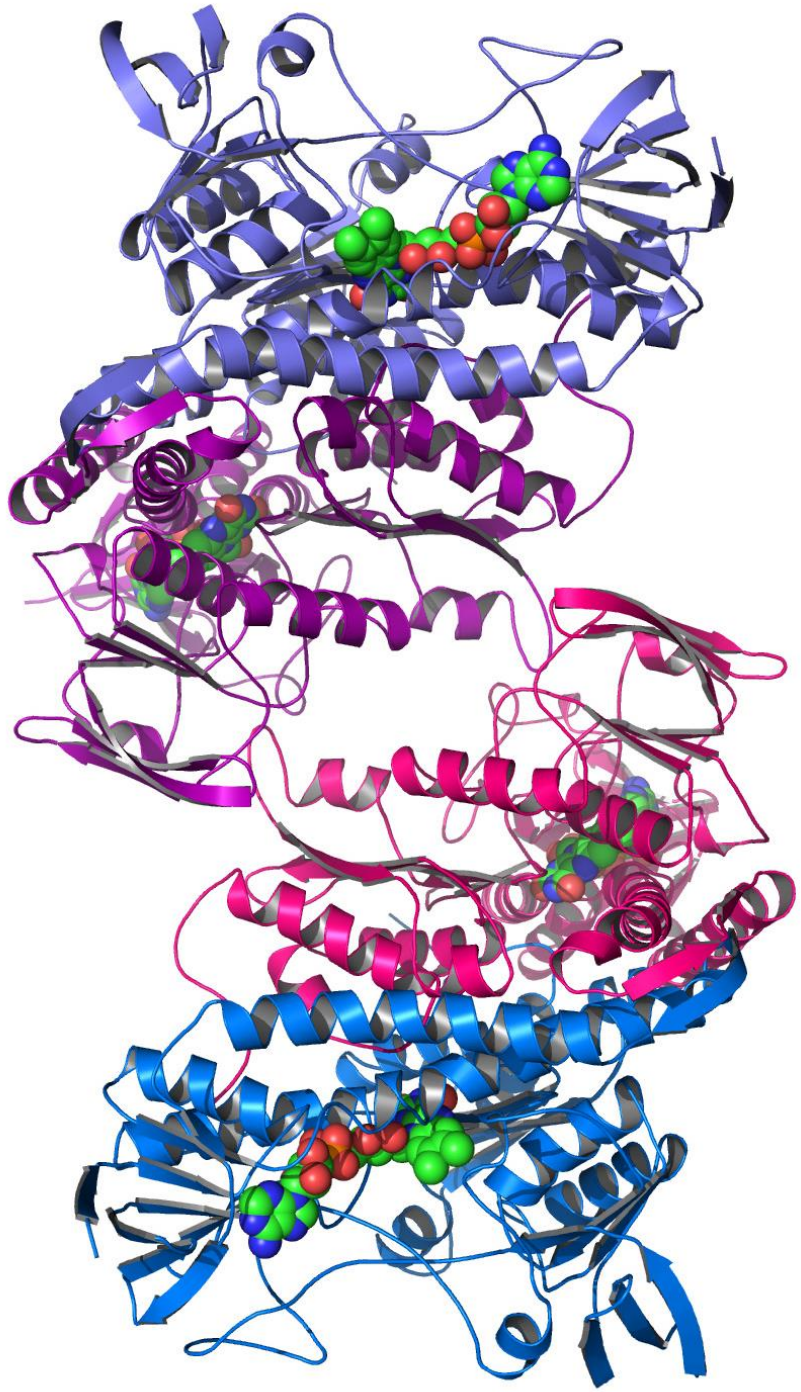
Predicting Biochemical Networks



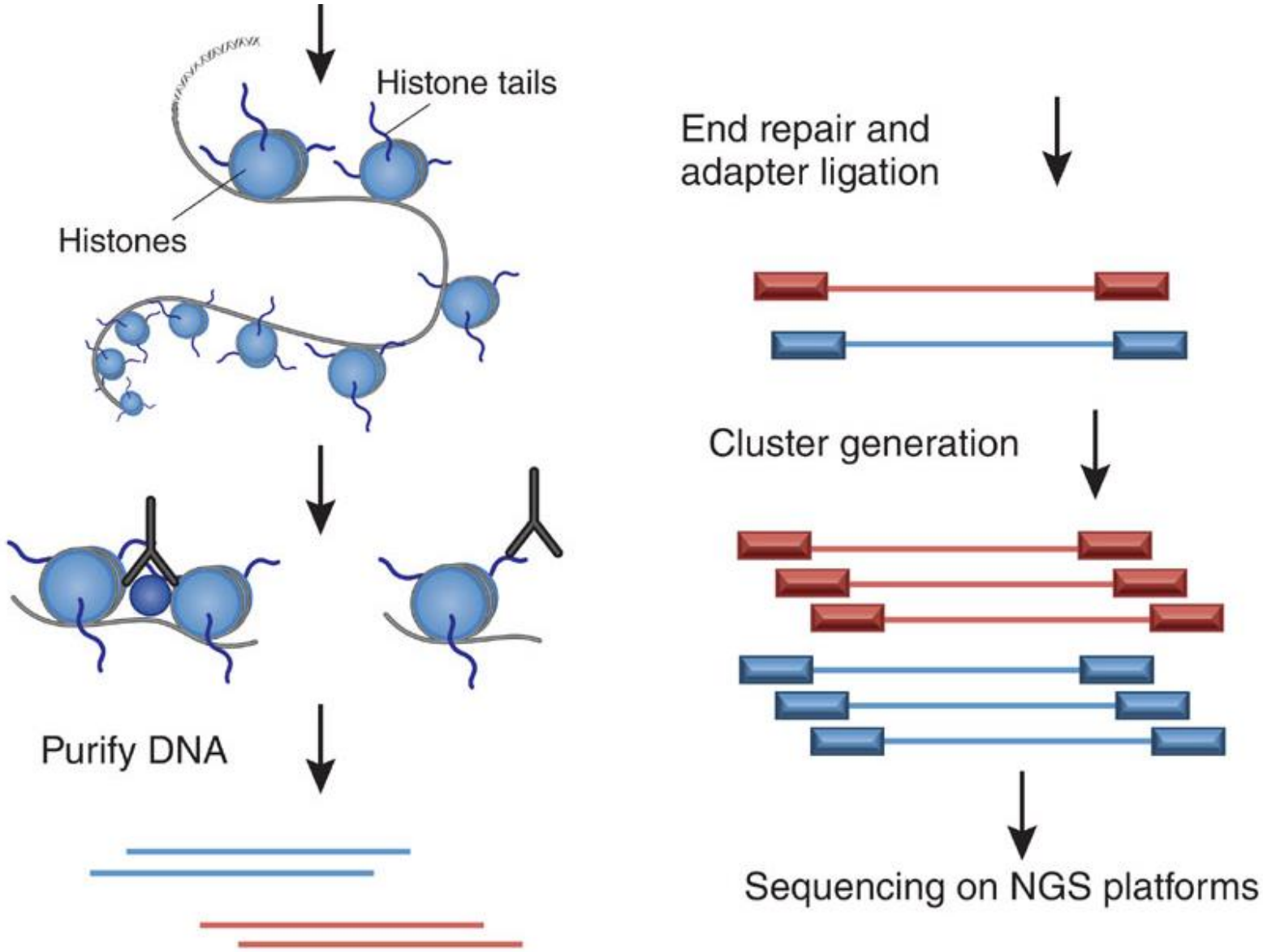
Sequence to Structure

attcgatcgatcgatcgatcaggcgcgcta
Cgagcggcgaggacctcatcatcgatcag…

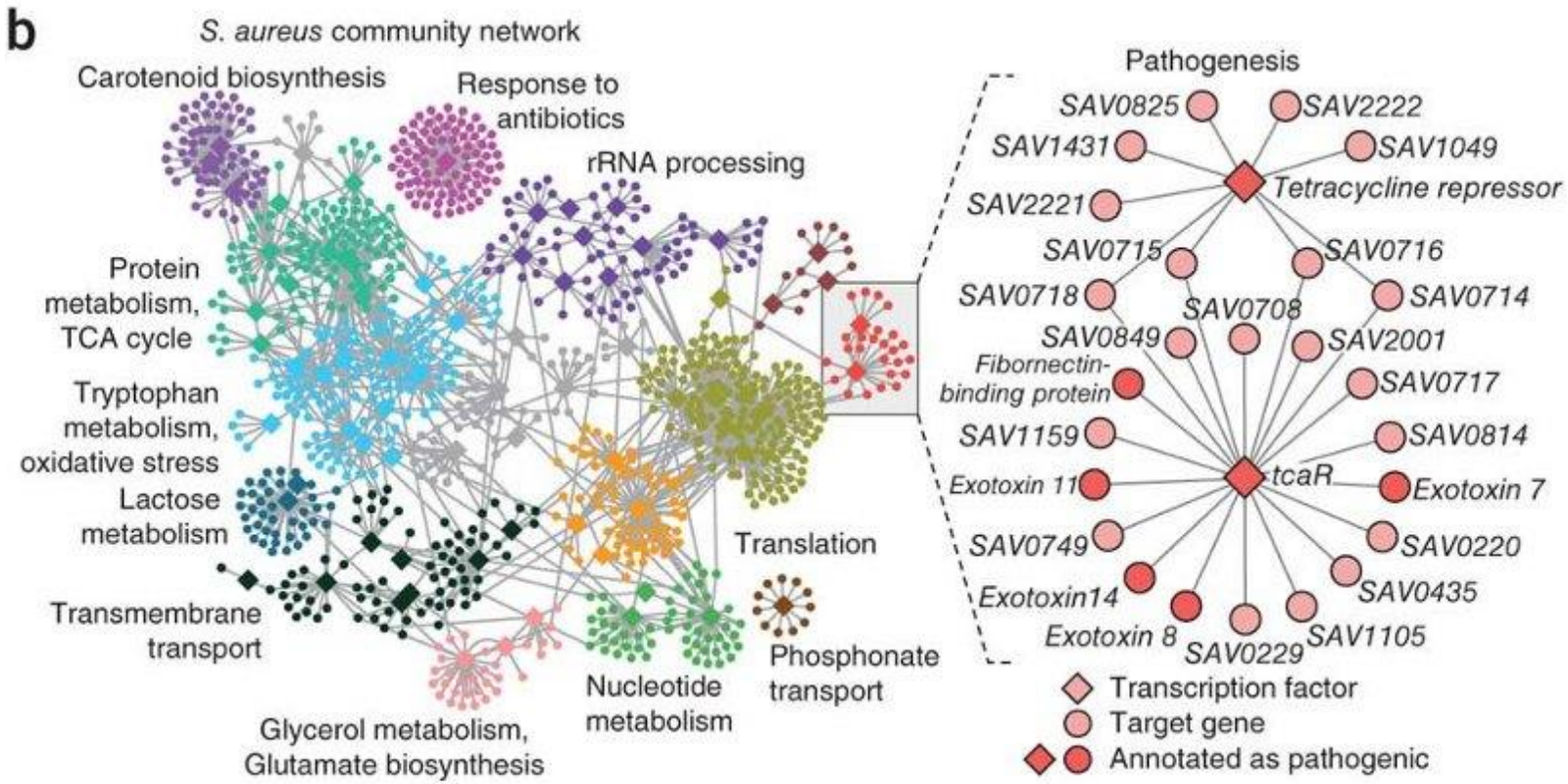
MRPQAPGSLVDPNEDELRMAPWYWGRISREEA
KSILHGKPDGSFLVRDALSMKGEYTLTLMKDG
CEKLIKICHMDRKYGFIETDLFNSVVEMINYY
KENSLSMYNKTLDITLSNPIVRAREDEESQPH
GDLCLLSNEFIRTCQLLQNLEQNLENKRNSFN
AIREELQEKKLHQSVFGNTEKIFRNQIKLNES
FMKAPADA……



ChIP-seq (ChIP-sequencing)

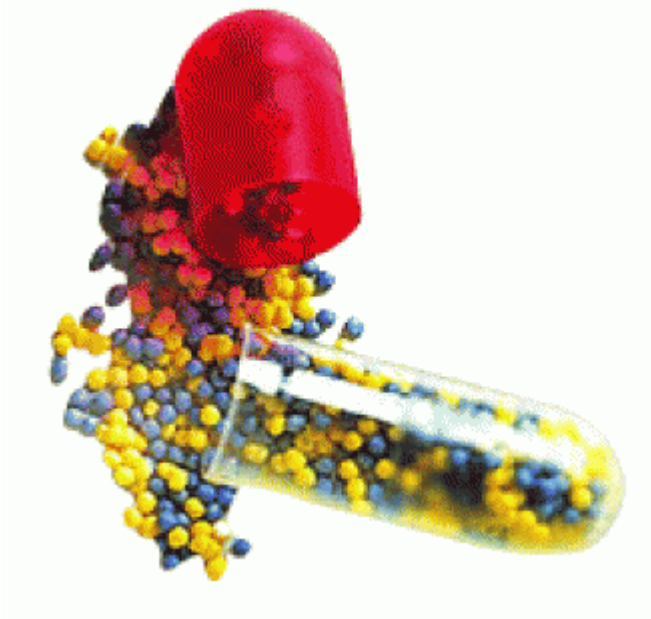


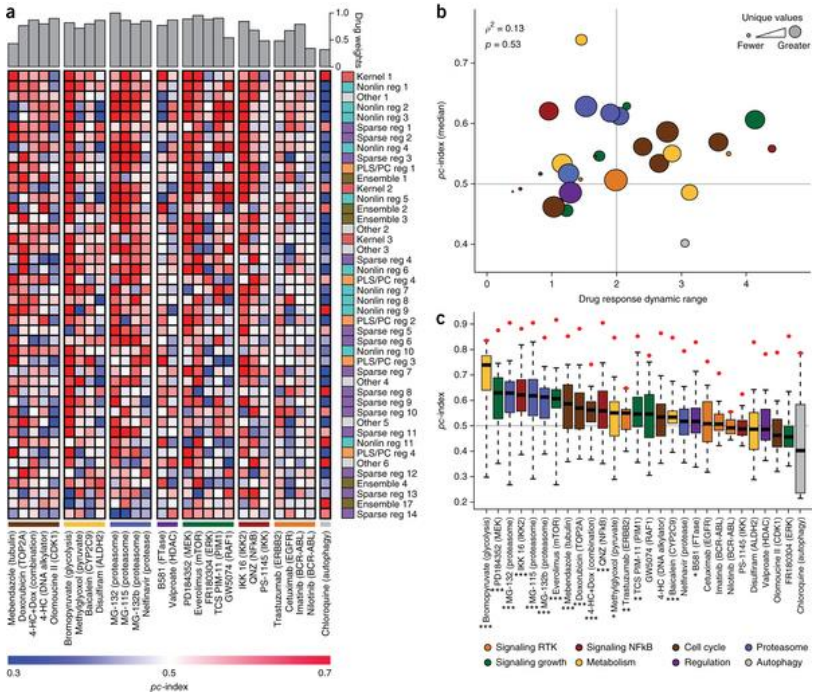
Gene Ontology Discovery



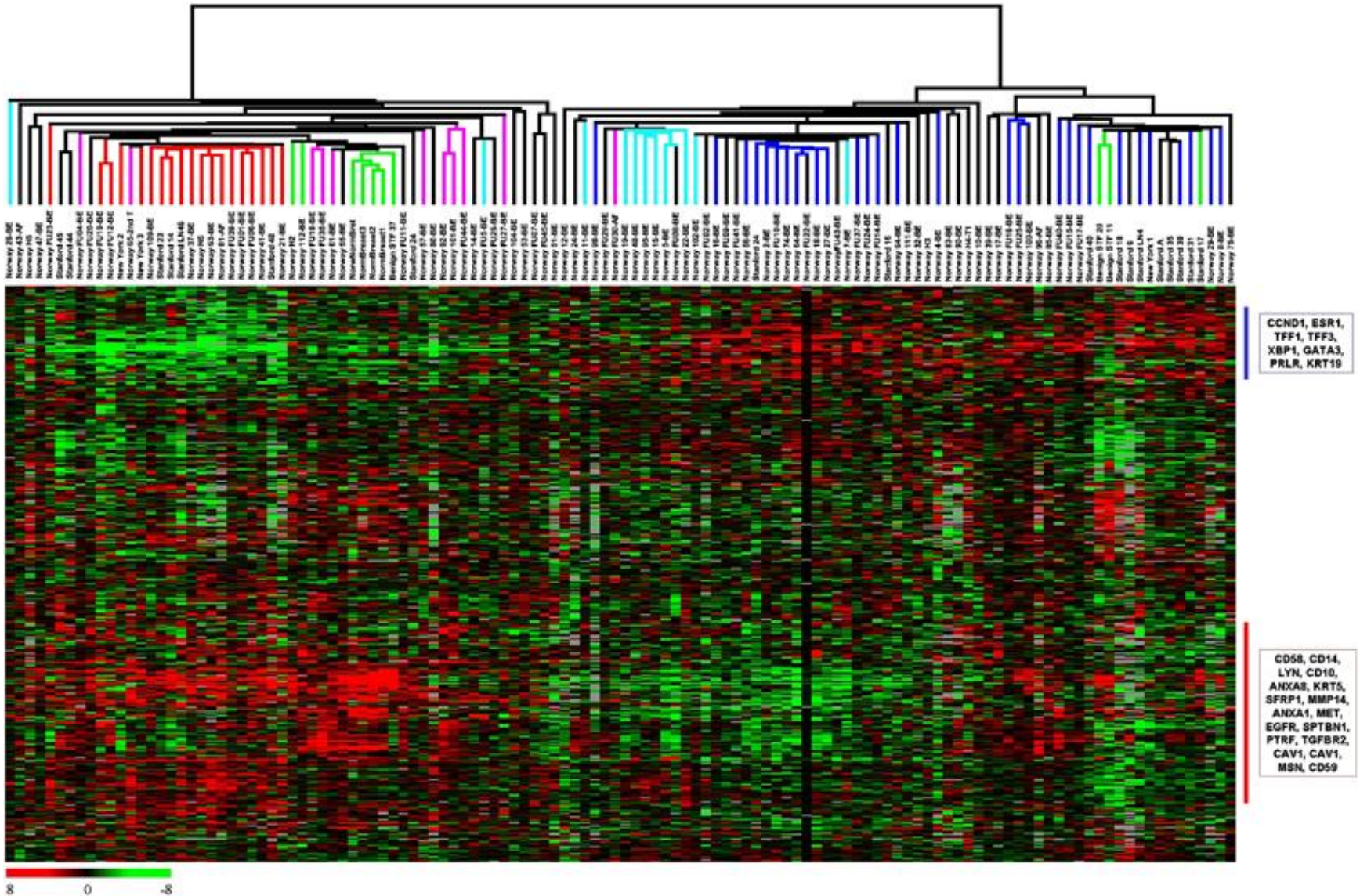
Drug Combination Predictions

- Lowering the risk of side effects by decreasing the dosages of individual drugs at equal or increased level of efficacy
- Overcoming redundant pathways through multiple drug targets
- Reducing risk of drug resistance in cancer

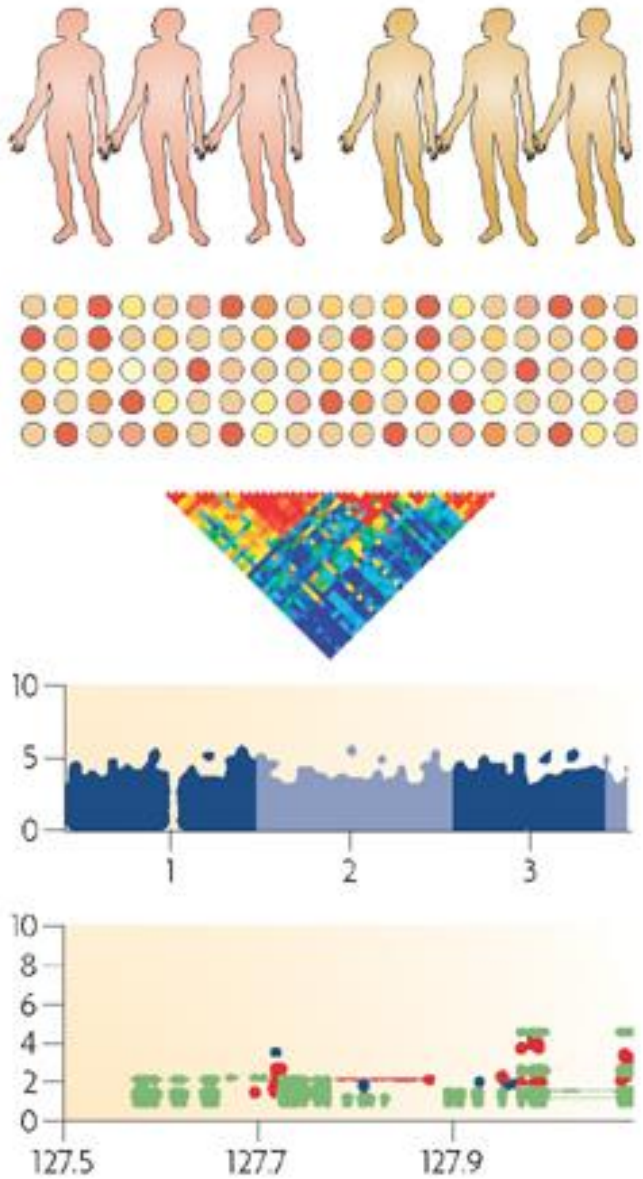


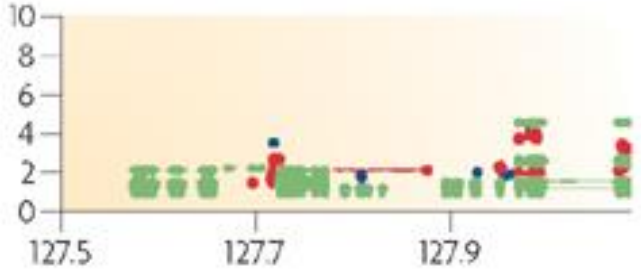


Prediction regulatory elements from gene expression data or SNPs, etc.

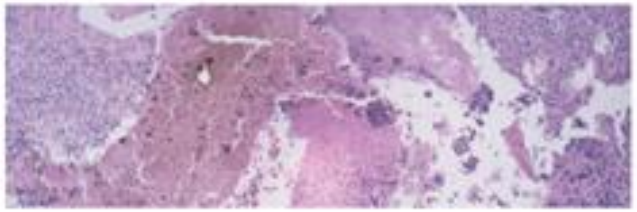


Genome wide association - Quantitative traits





Genotypes	CC	AA	CA	Total
Cases observed	59	27	98	184
Controls observed	60	89	36	185
Total	119	116	134	369



Computational Photography

1 NORMAL
The Professional/Amateur

USAGE **43%**

Normal filter users are either tech-challenged amateurs who still can't work their smartphones or tech-savvy frauds, passing off photos they fixed in other applications as #nofilter works of art. You're not fooling anyone.

2 EARLYBIRD
The Wannabe Wes Anderson

USAGE **10%**

Earlybird users' first Instagram photos probably featured their new record players. These photographers love to criticize anything modern, keep their colors muted, and make sure their friends look eternally stuck in a '70s basement.

7 AMARO
The Night Owl

USAGE **4%**

Amaro users may be shut-ins or party animals, but either way they can never seem to take a properly lit photo. Luckily, Amaro saves the day, making those dark pics from the bar up to 3% lighter.

3 X-PRO II
The Optimist

USAGE **8%**

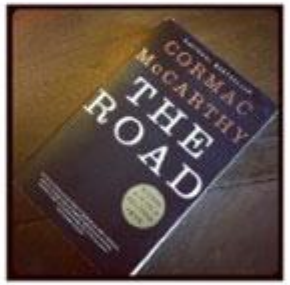
These users see the world a little brighter and want you to see it that way, too. So what if it's a gray day? They'll make sure those raindrops pop against a windshield—and will then make the photo their new wallpaper.

4 VALENCIA
The Light-Sensitive Snapper

USAGE **5%**

We're not sure if they're perpetually hung-over, but we do know that Valencia users want to take everything down a notch. Their ever-so-slightly faded photos capture the moment without capturing our interest.

8 HUDSON
The Cold-Hearted



USAGE **3%**

The world can seem too "alive" to these gloomy photographers. Hudson takes the edge off by making everything they snap look a little colder and a little flatter, especially photos of whatever classic novel they're currently reading.

5 RISE
The Lazy Artist

USAGE **4%**

These users want to filter their photos but don't want to scroll through all the options. Just like they want well-lit photos but don't want to learn how to take them. Rise, sitting conveniently in the first 5 choices, is the answer to their prayers.

6 HEFE
The Color Crazy

USAGE **4%**

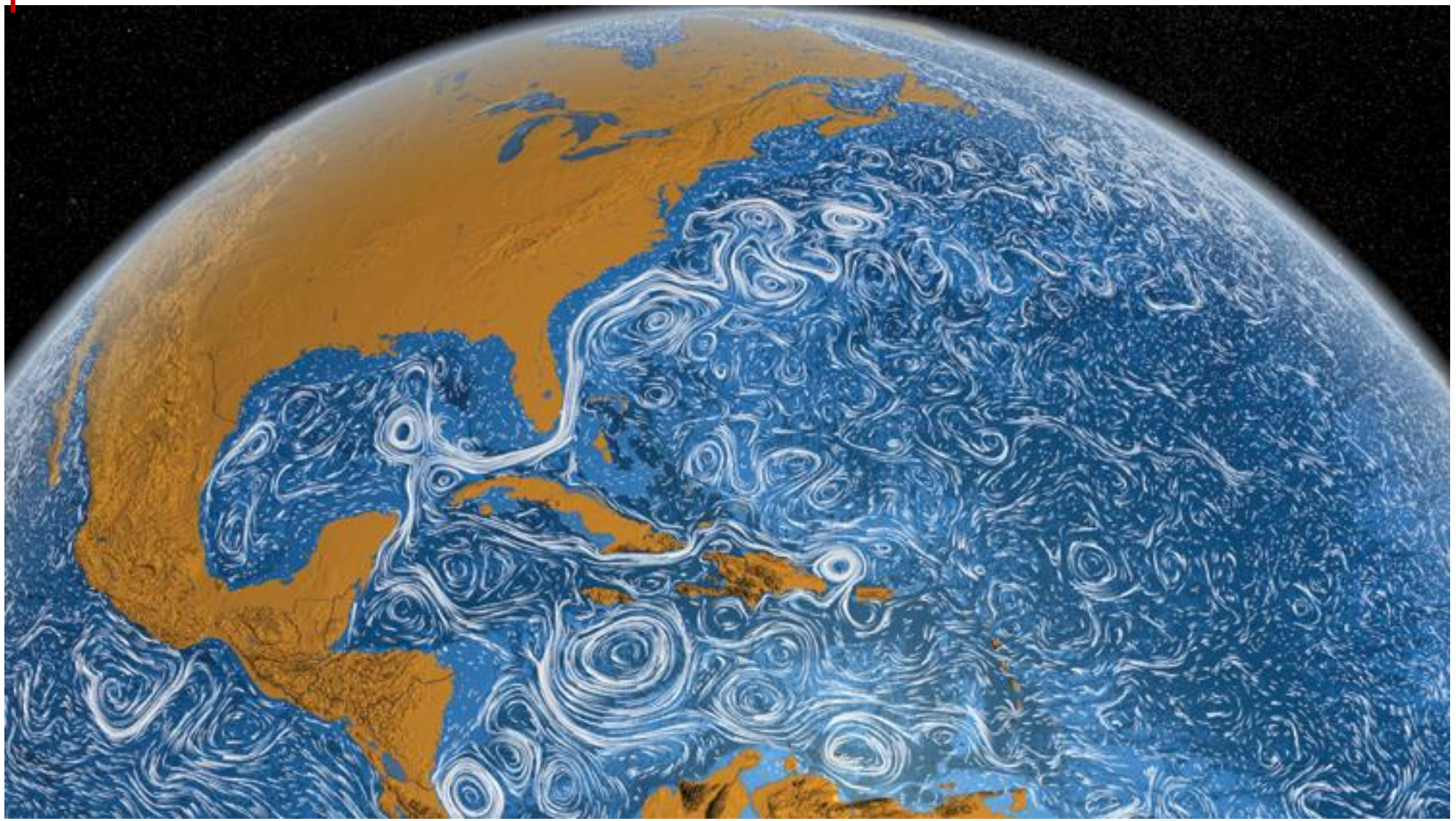
Fans of Hefe want to turn every image into a vibrant masterpiece, even if it's just a lone flip-flop in the sand. Beware of their sunset photos—unless you want to be blinded.

9 BRANNAN
The Art Major

USAGE **3%**

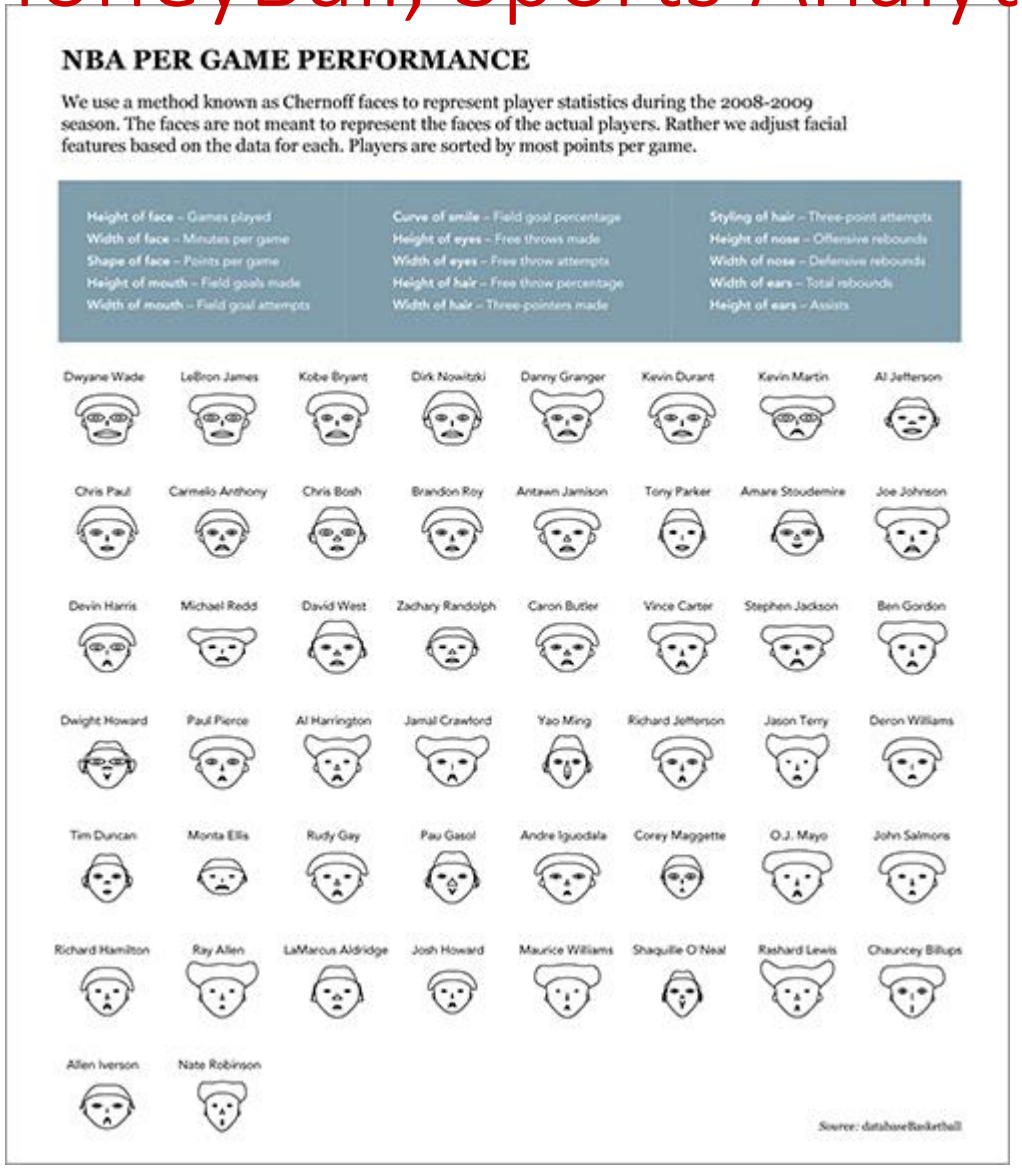
These filter fans may have dropped out of art school in real life, but not in their hearts. They want their photos to be just as dramatic as they are, no matter how boring the brunch plate, tree, or park bench is.

Perpetual Ocean – Predict storms?



- Perpetual Ocean (2012) by NASA/Goddard Space Flight Center Scientific Visualization Studio, http://datafl.ws/2bc

MoneyBall, Sports Analytics?



- Cherrnoff Faces for top NBA scorers during the 2008–2009 season

See Something or Say Something

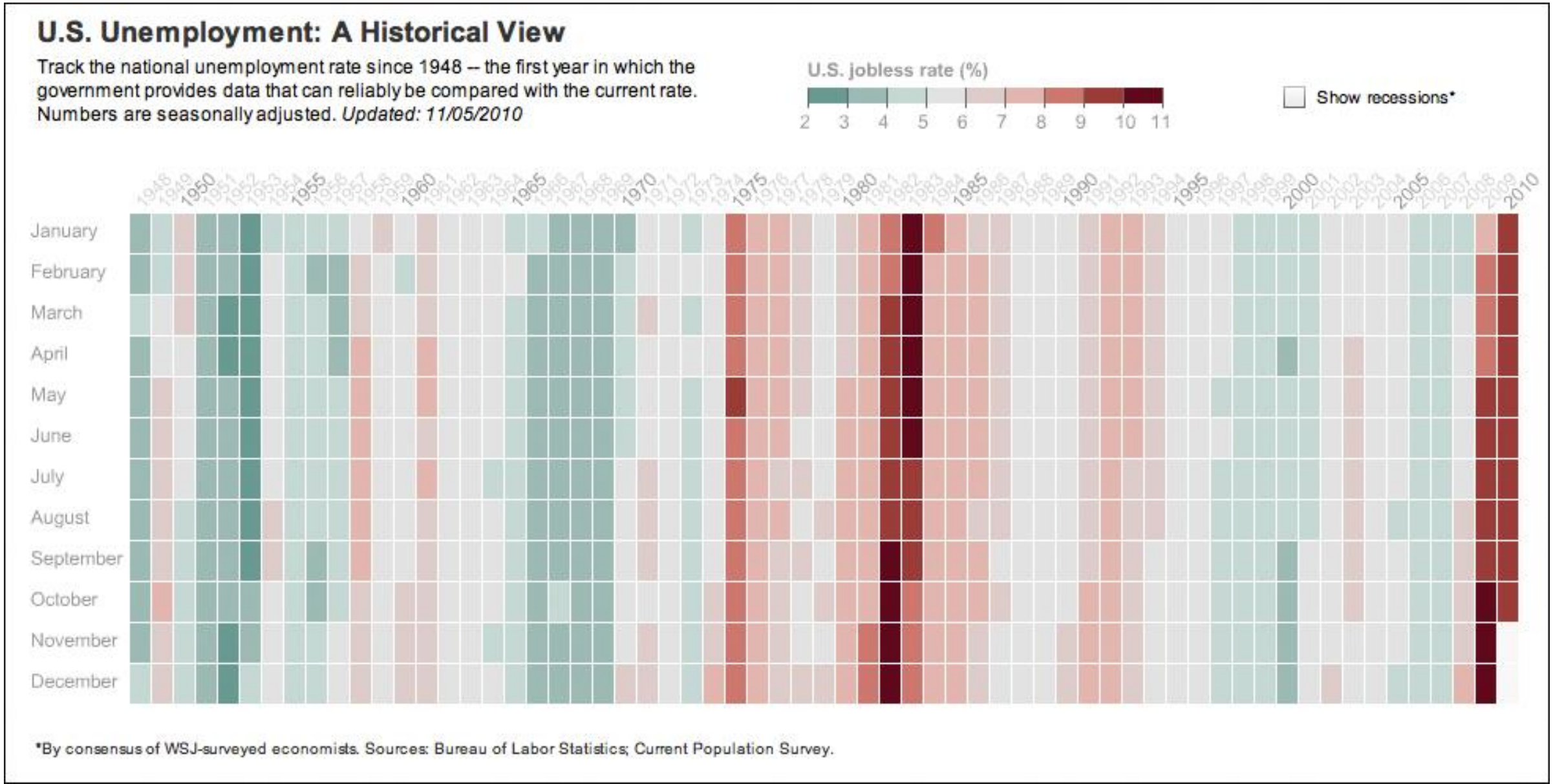
See Something or

Say Something (2011) by Eric Fischer,

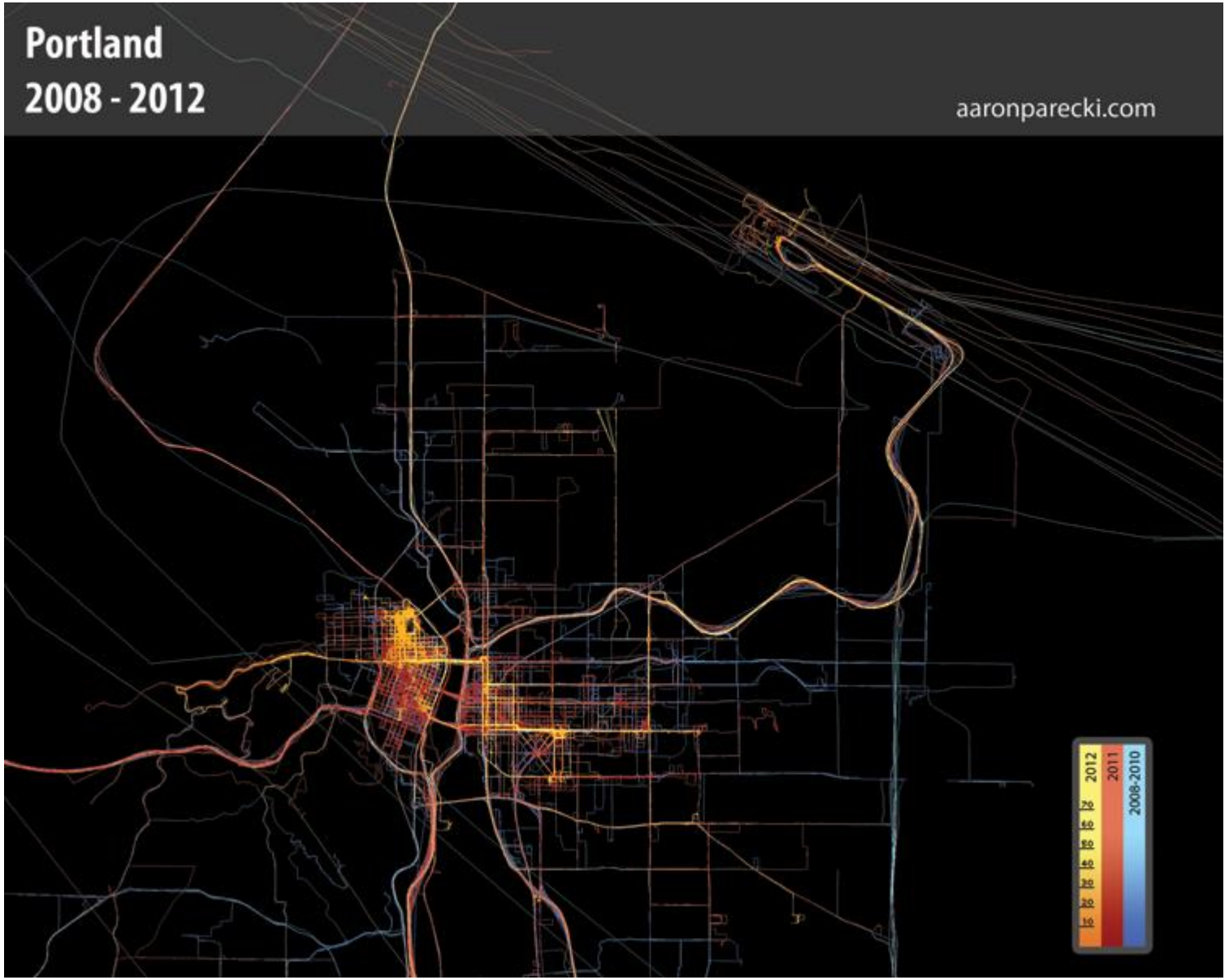
http://datafl.ws/2ba

Where people post geotagged photos to Flickr from and geotagged tweets to Twitter from.

Patterns in Unemployment?

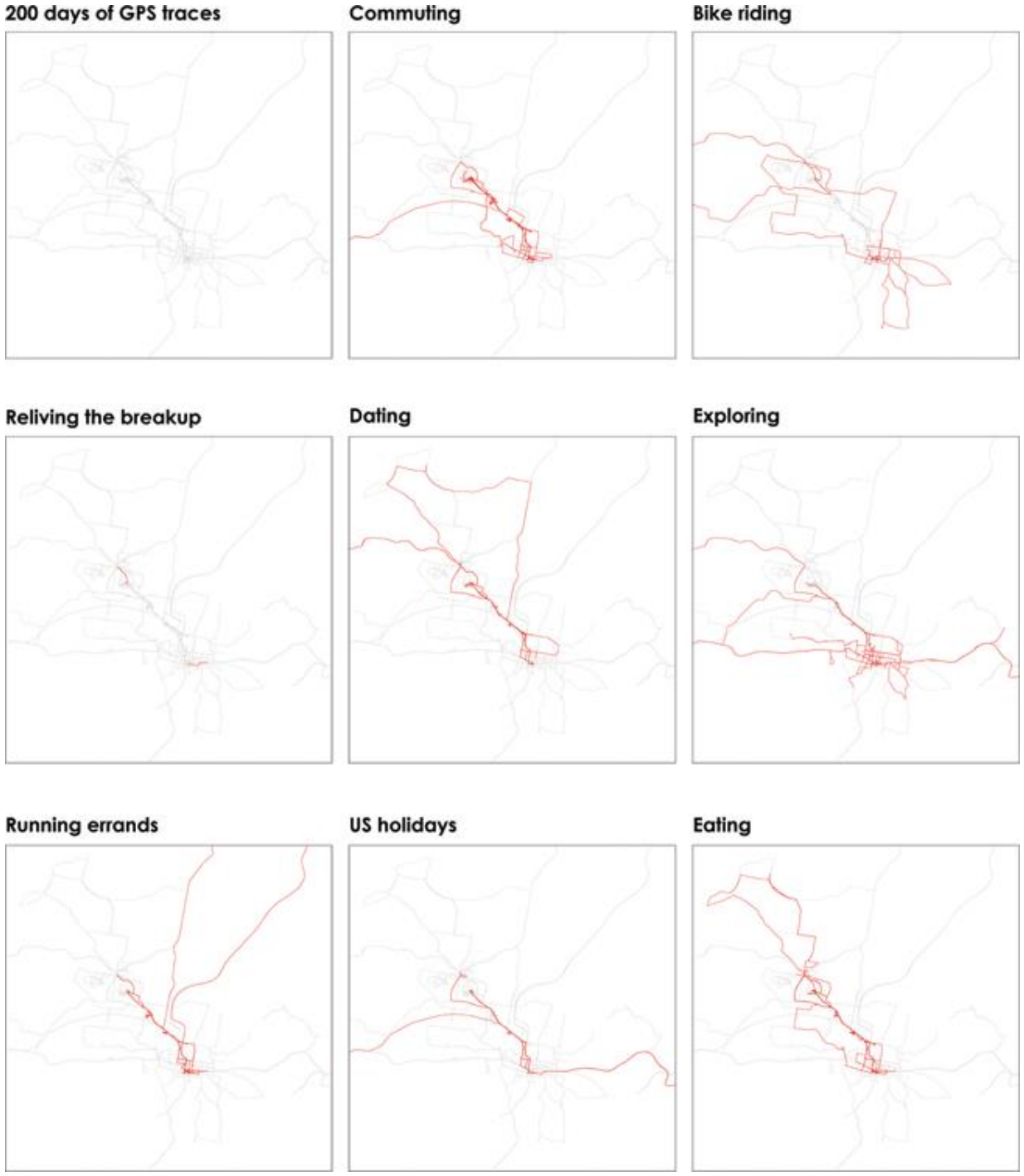


GPS traces

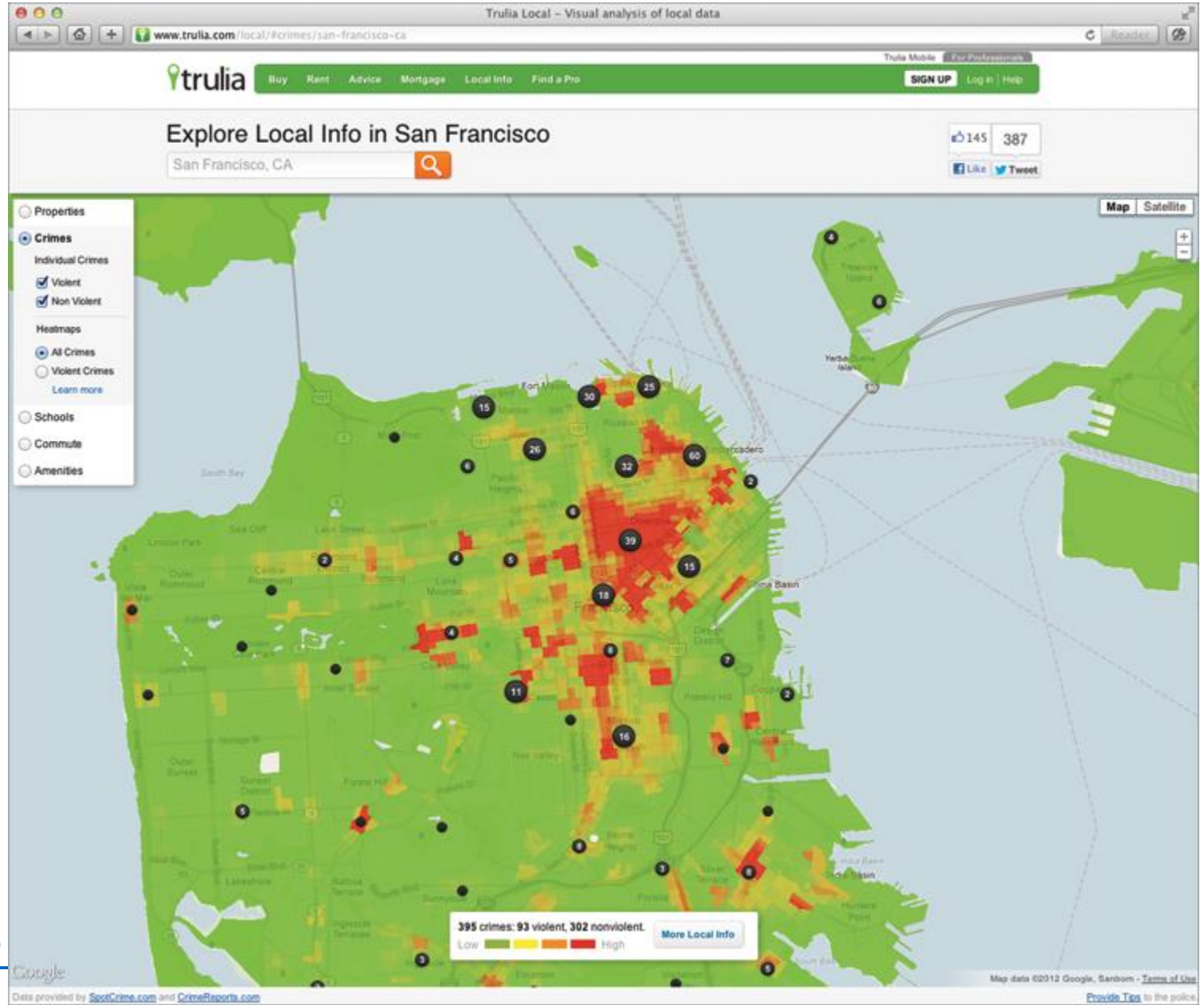


- GPS traces collected by Aaron Parecki, http://aaronparecki.com

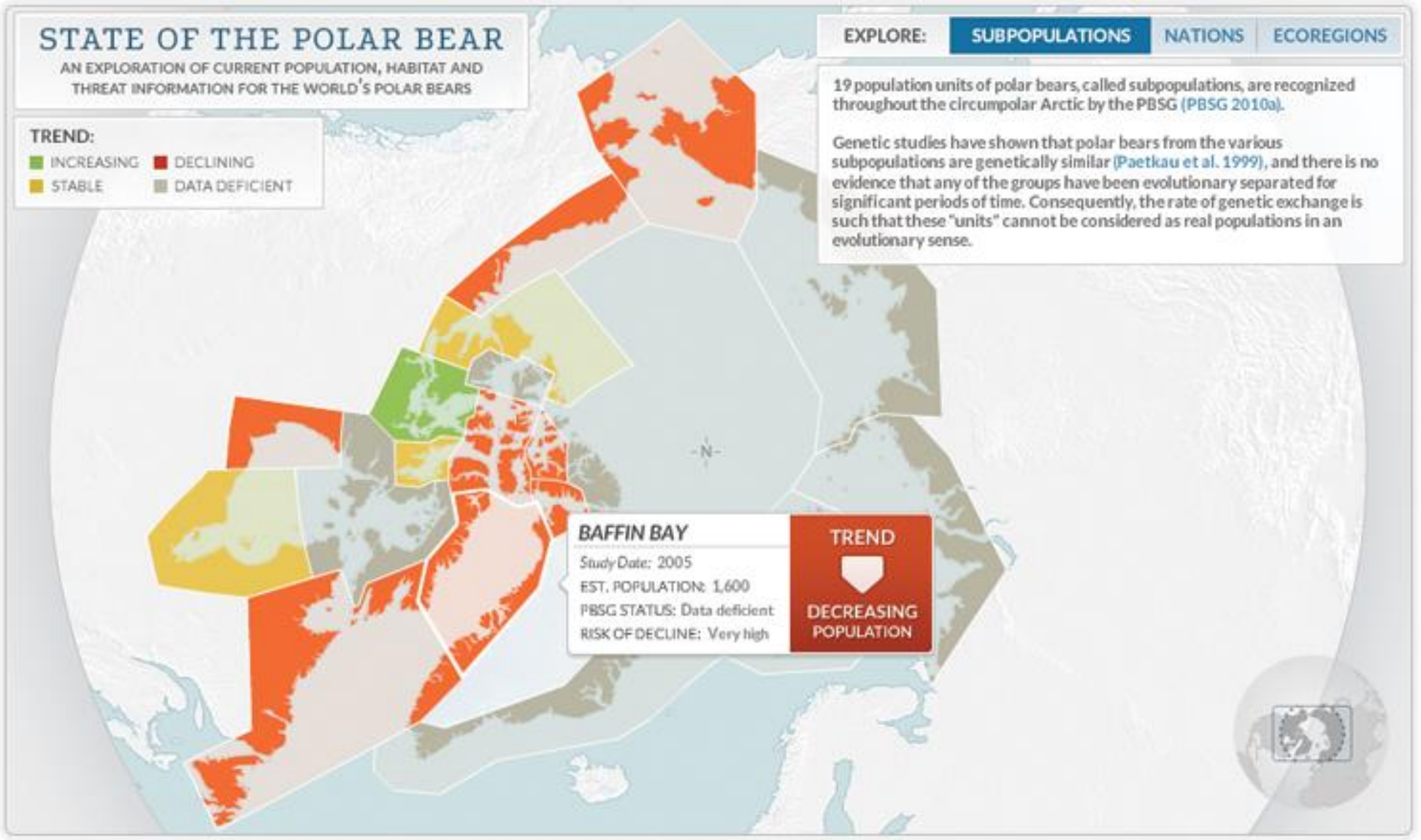
- Selected maps from Atlas of the Habitual by Tim Clark, http://www.tlclark.com/atlasofthehabitual/



Predicting Crime, Activity, etc.

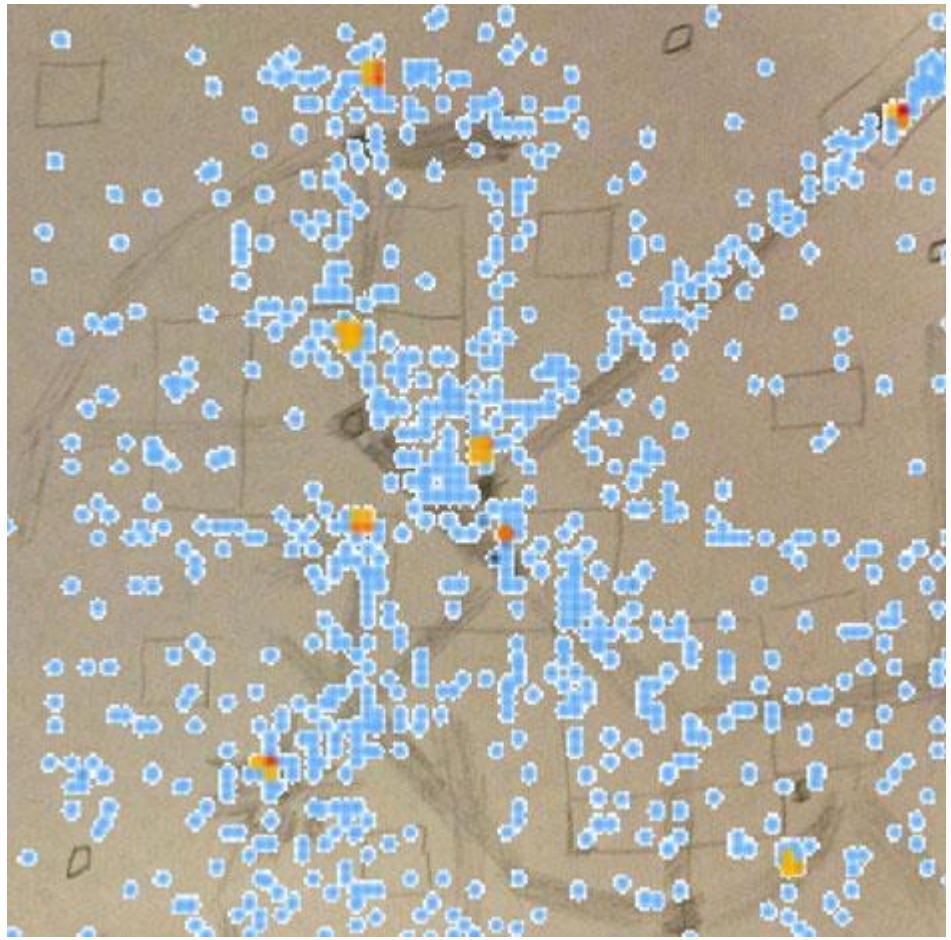


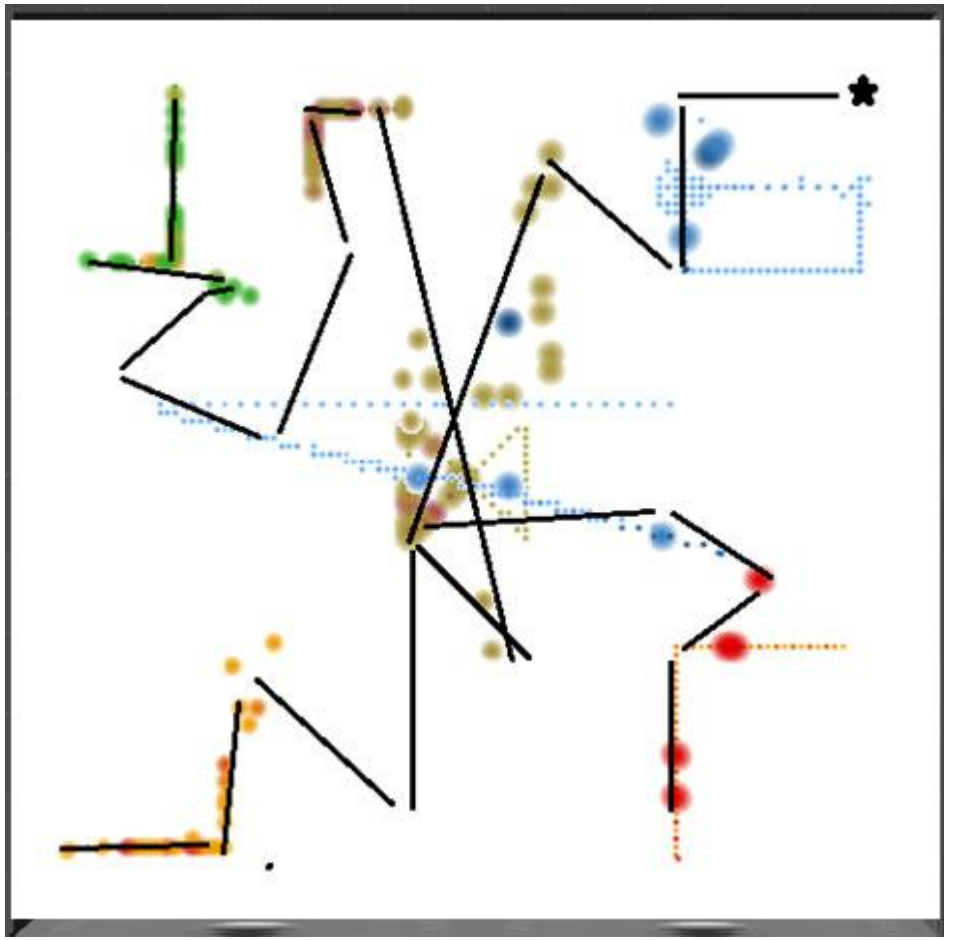
- Trulia Local, [http



- State of the Polar Bear (2012) by Periscopic, http://pbsg.npolar.no/en/dynamic/app/

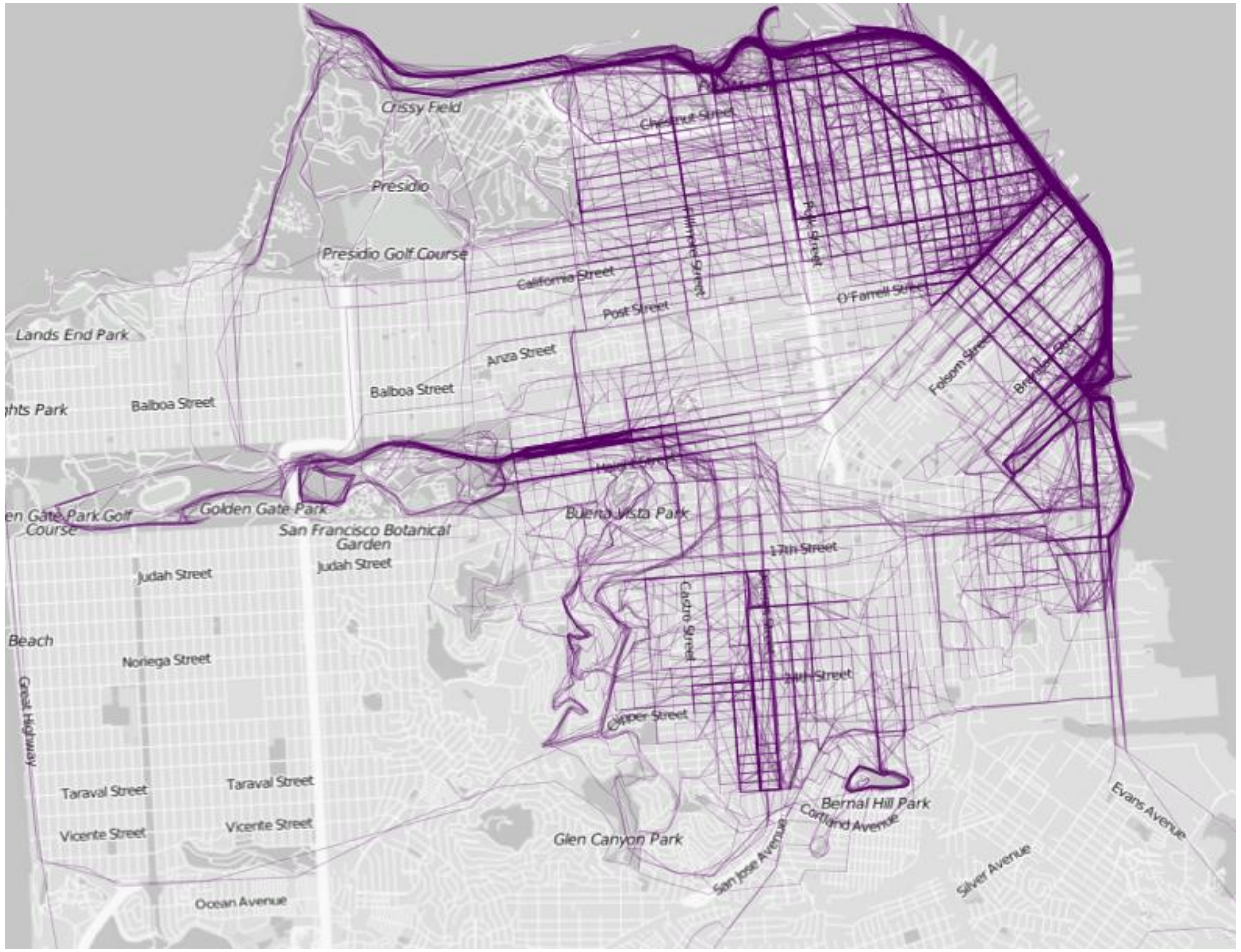
Predicting player paths





GPS Traces

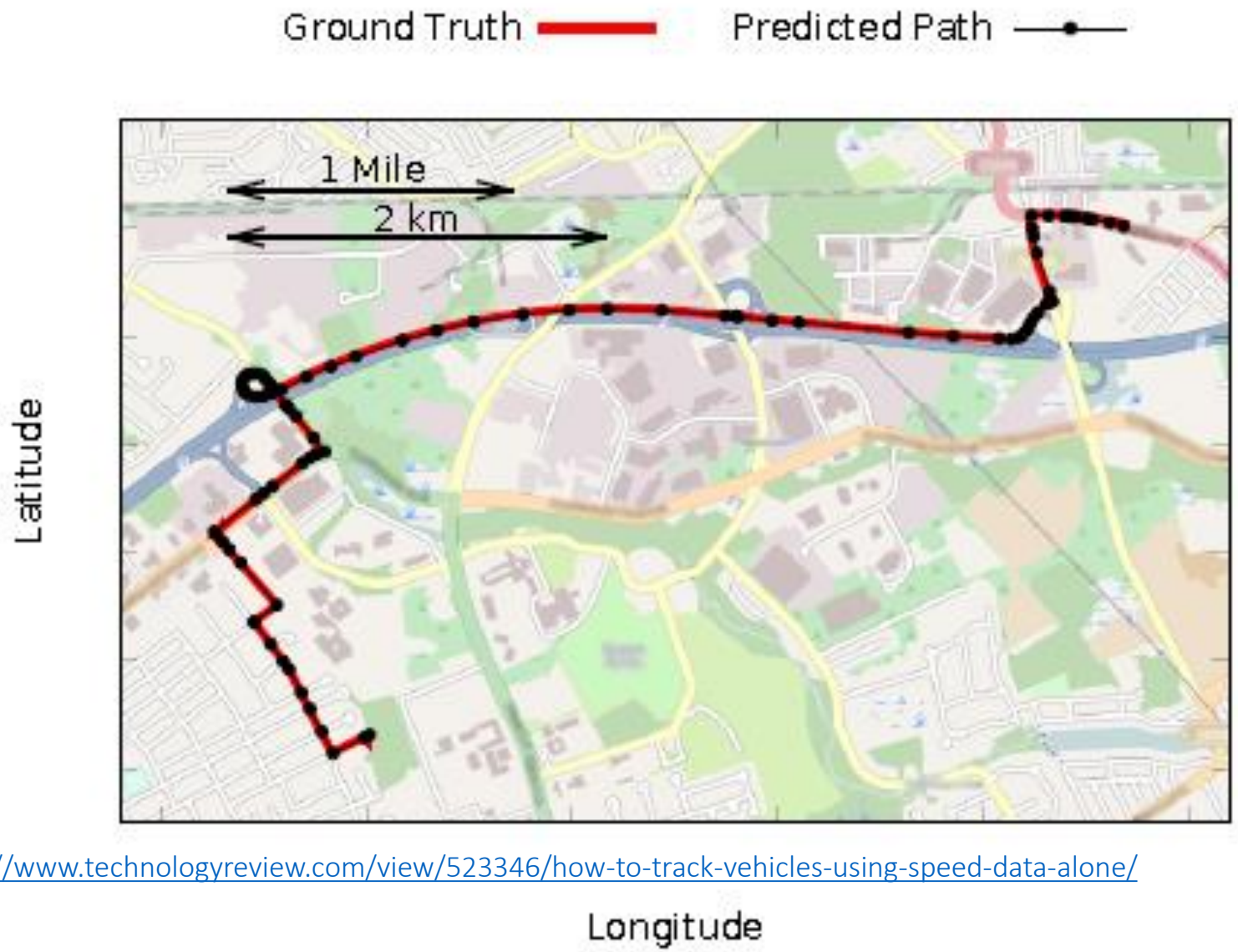

Saint Nicholas Park
Riverside Park
Morningside Park
Harlem River
Hudson River
Liberty State Park
Ellis Island
East River
Newtown
Brooklyn Botanic Garden
Prospect Park


Crissy Field
Chestnut Street
Presidio
Presidio Golf Course
California Street
Polk Street
O'Farrell Street
Post Street
Lands End Park
Anza Street
Balboa Street
Balboa Street
Folsom Street
Golden Gate Park
San Francisco Botanical Garden
Buena Vista Park
17th Street
Judah Street
Judah Street
Beach
Noriega Street
Castro Street
Great Highway
Clipper Street
Taraval Street
Taraval Street
Vicente Street
Vicente Street
Bernal Hill Park
Cortland Avenue
Glen Canyon Park
San Jose Avenue
Evans Avenue
Silver Avenue
Ocean Avenue

Location Data Is Being Used to Predict the Events You Will Want to Attend

http://www.technologyreview.com/view/526096/how-your-location-data-is-being-used-to-predict-the-events-you-will-want-to-attend/

How To Track Vehicles



http://www.technologyreview.com/view/523346/how-to-track-vehicles-using-speed-data-alone/

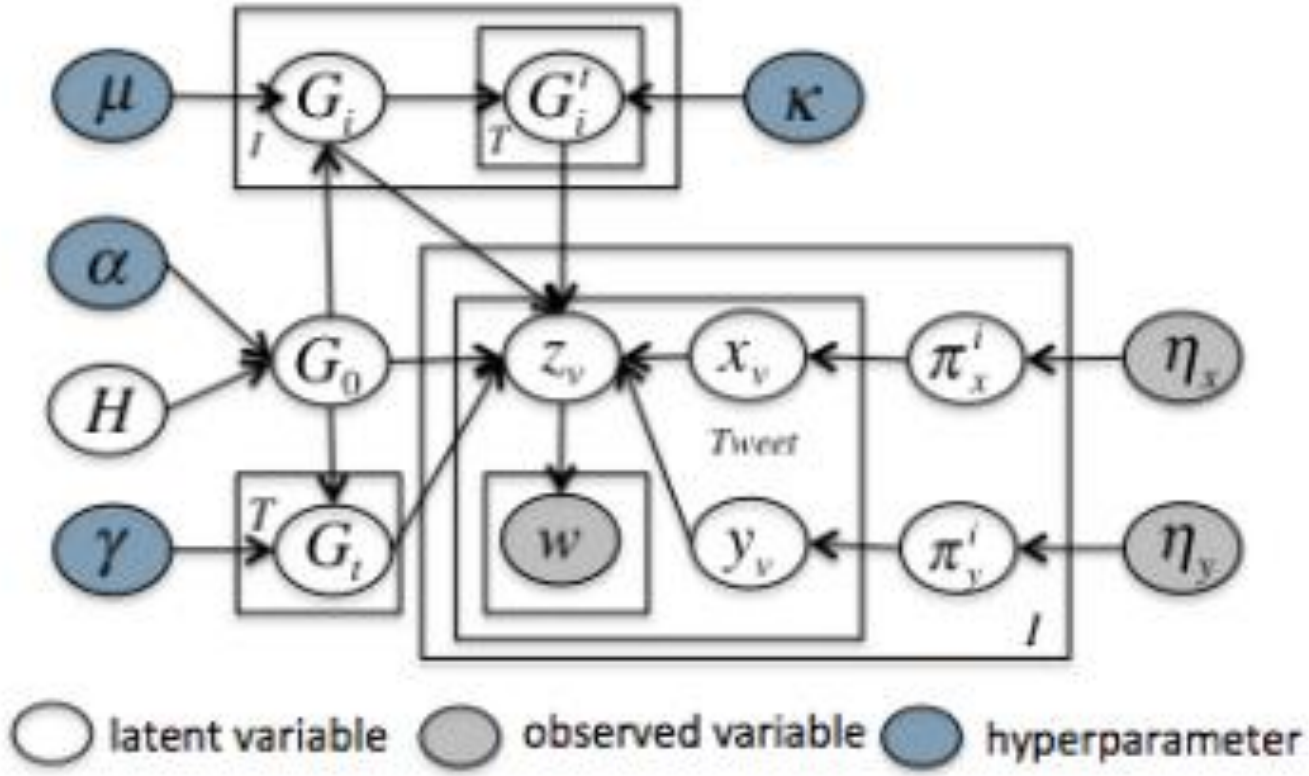
GPS Data on Beijing Cabs Reveals the Cause of Traffic Jams

http://www.technologyreview.com/news/425553/gps-data-on-beijing-cabs-reveals-the-cause-of-traffic-jams/

A Driving Route Made Just for You

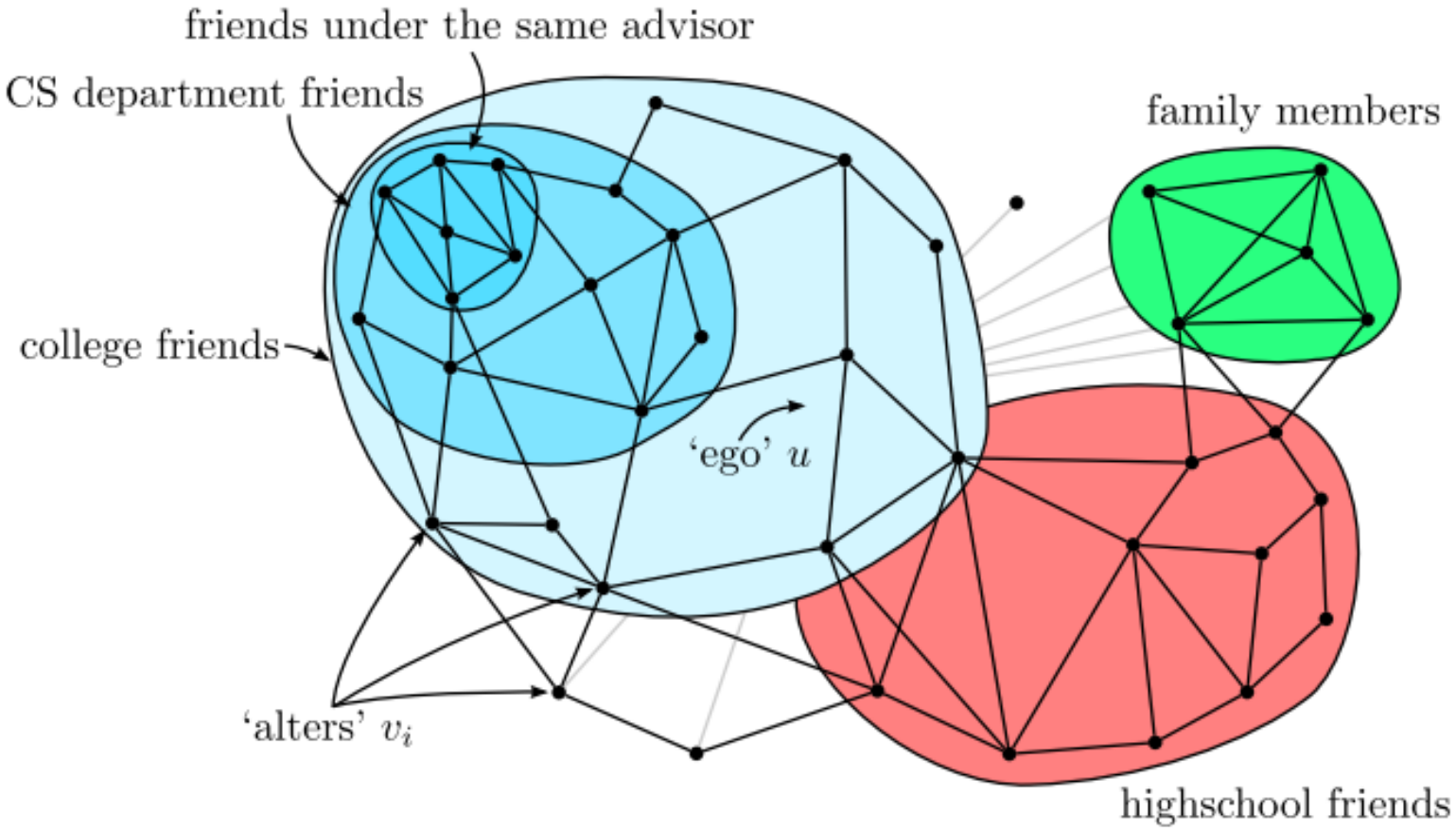
http://www.technologyreview.com/news/425271/a-driving-route-made-just-for-you/

Algorithm Writes People's Life Histories Using Twitter Stream



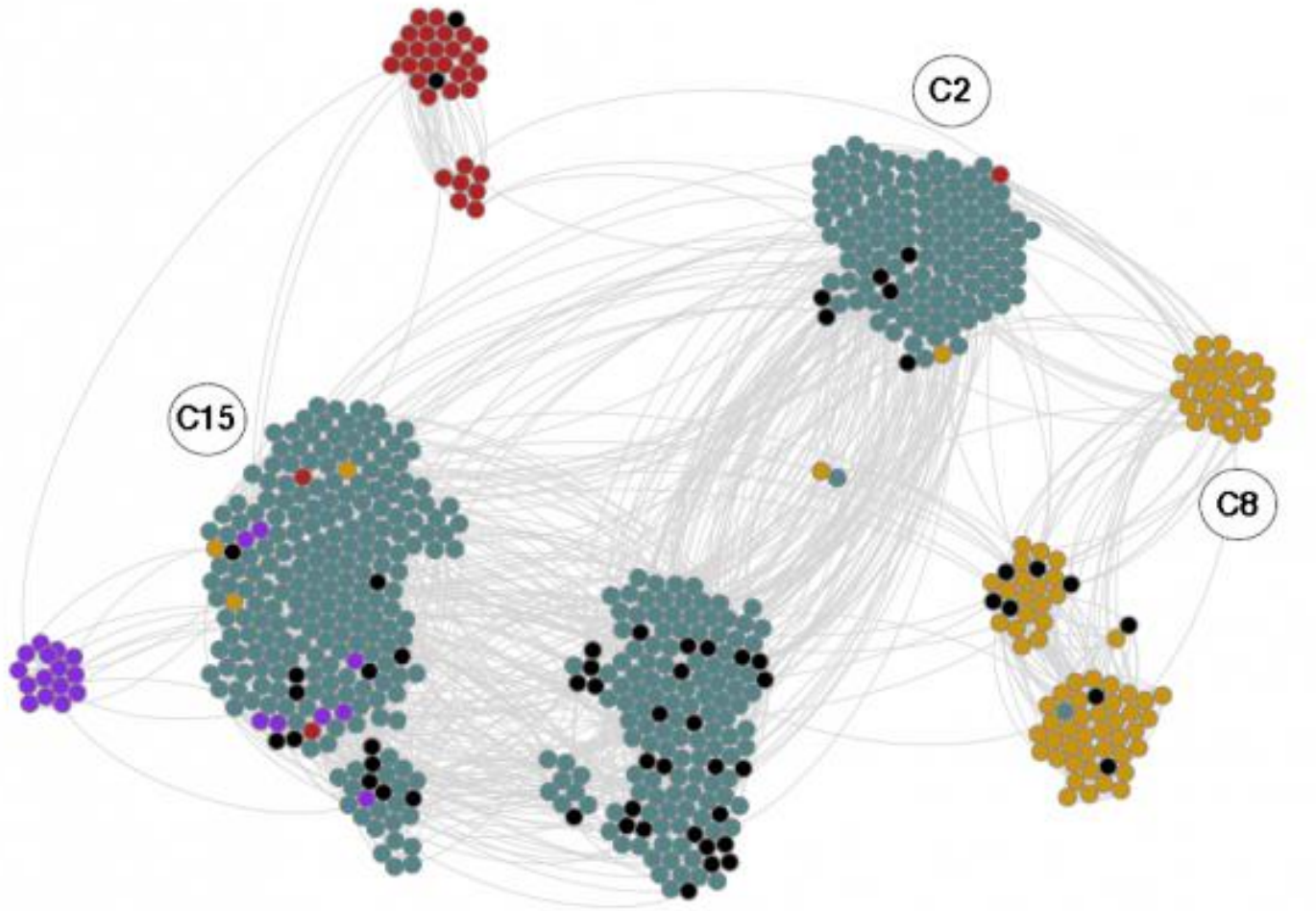
http://www.technologyreview.com/view/519961/algorithm-writes-peoples-life-histories-using-twitter/

Algorithm Predicts Circles of Friends



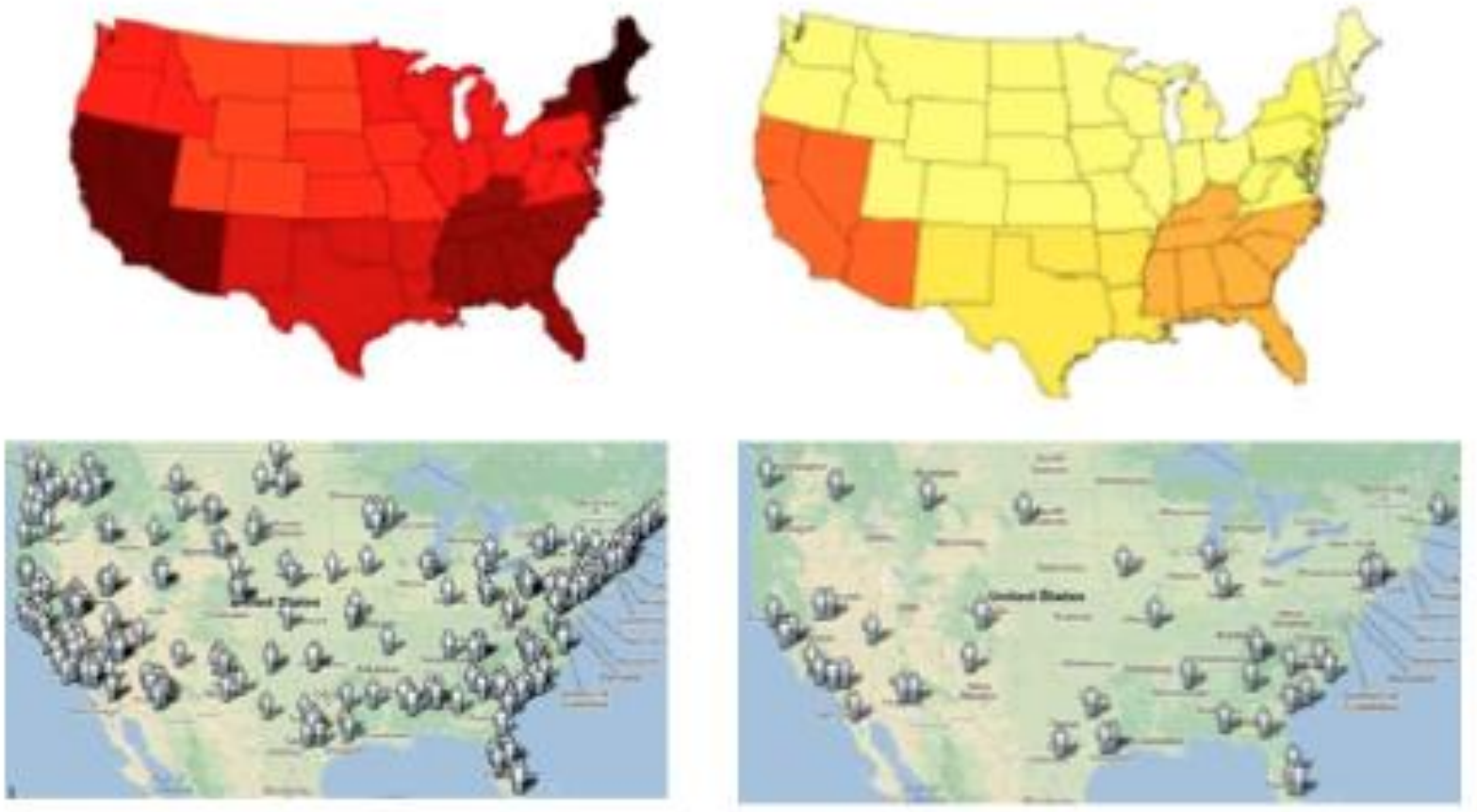
http://www.technologyreview.com/view/506796/algorithm-predicts-circles-of-friends-using-contacts-data/

Social Media Analysis Reveals The Complexities Of Syrian Conflict



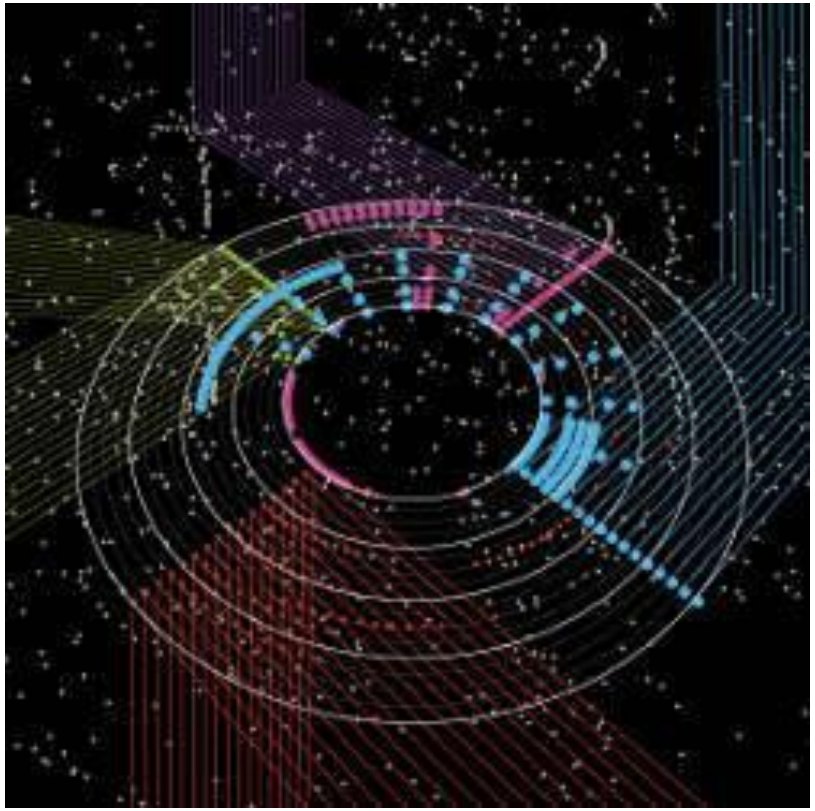
http://www.technologyreview.com/view/524386/social-media-analysis-reveals-the-complexities-of-syrian-conflict/

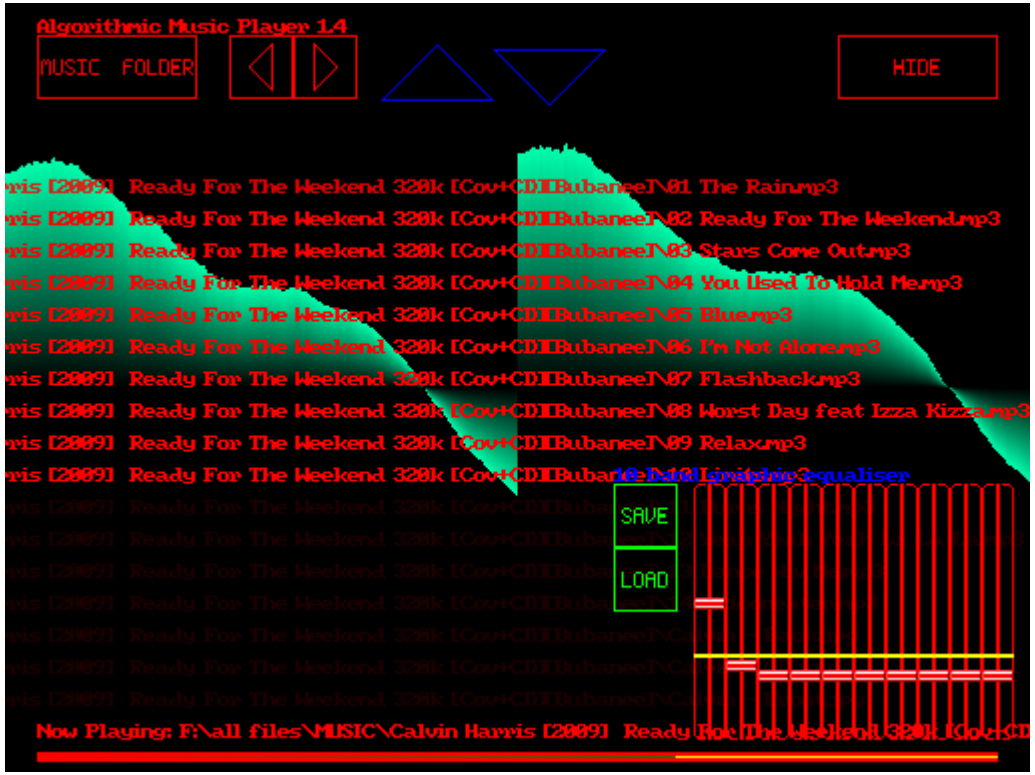
Twitter Datastream Used to Predict Flu Outbreaks



http://www.technologyreview.com/view/520116/twitter-datastream-used-to-predict-flu-outbreaks/

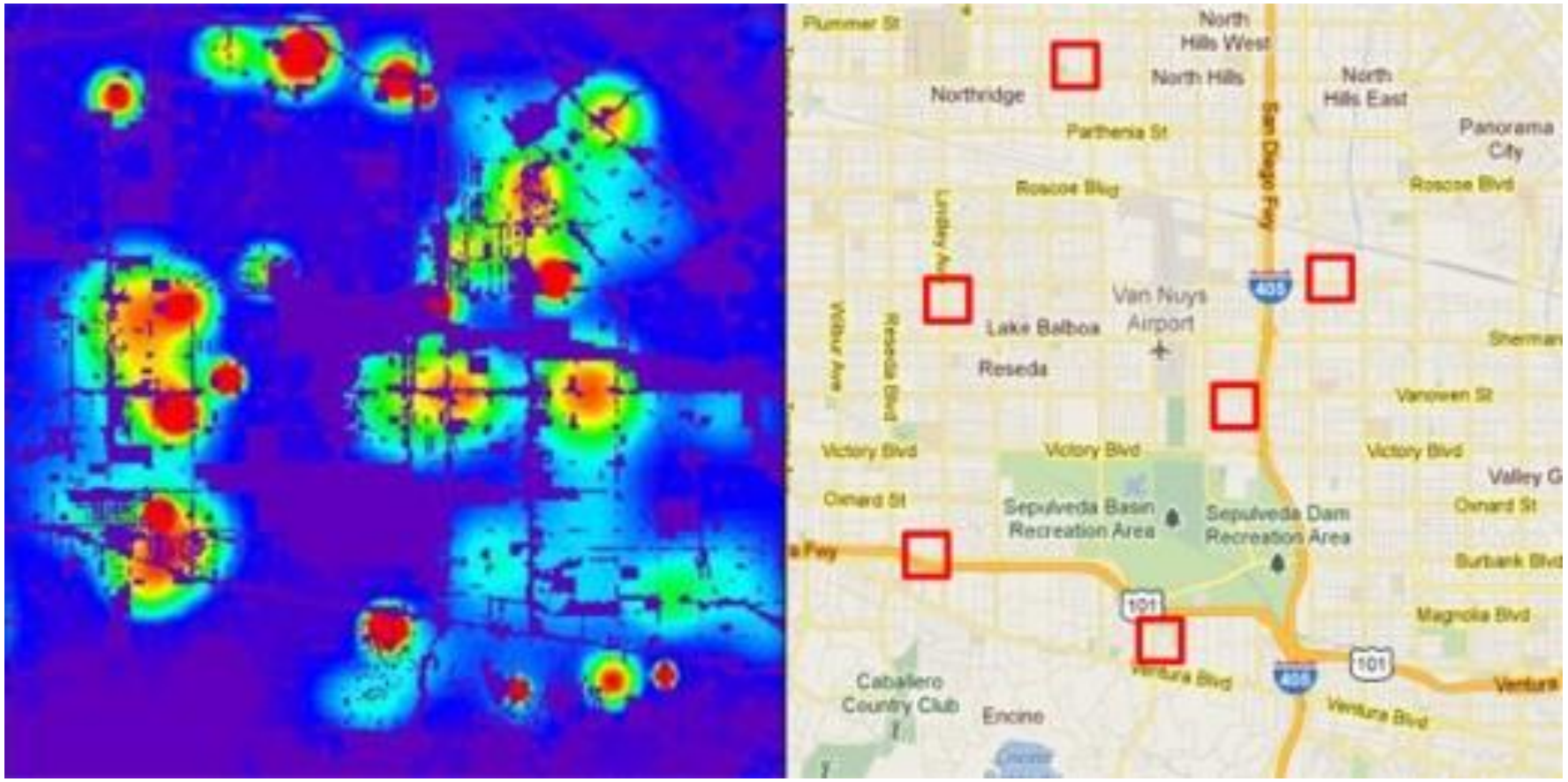
Algorithmic Music





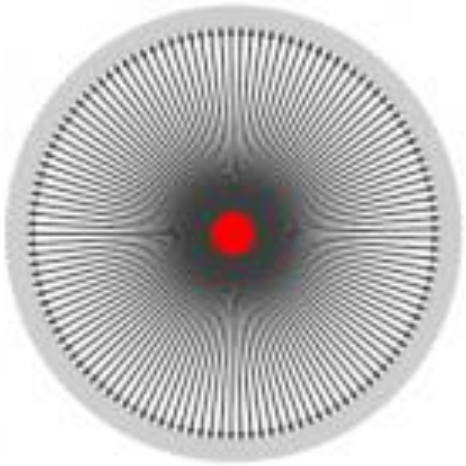
http://www.technologyreview.com/view/426309/the-emerging-art-of-algorithmic-music/

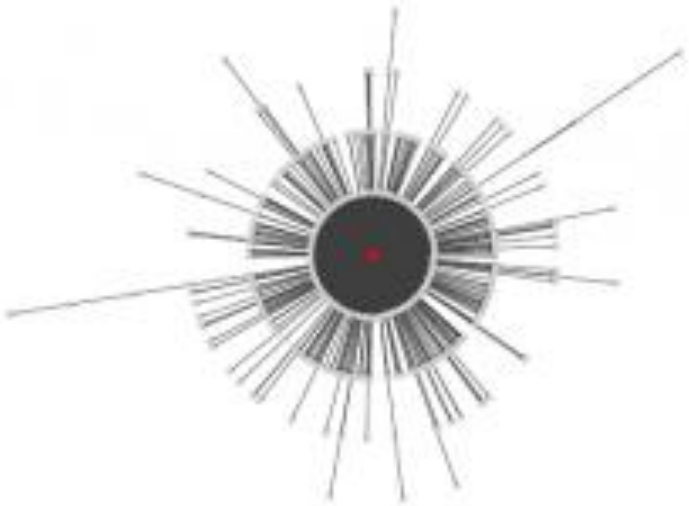
Crime-Predicting Algorithm



http://www.technologyreview.com/news/428354/la-cops-embrace-crime-predicting-algorithm/

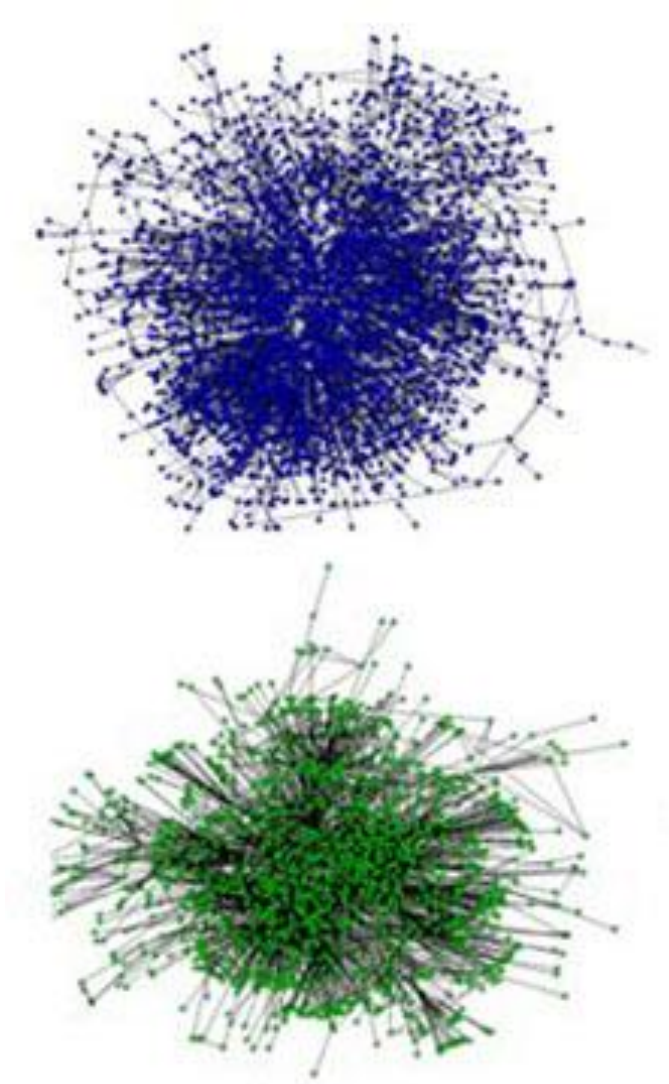
Sharing Cascades on Facebook





http://www.technologyreview.com/view/525821/the-curious-nature-of-sharing-cascades-on-facebook/

Can Social Networks Be Generated Automatically?

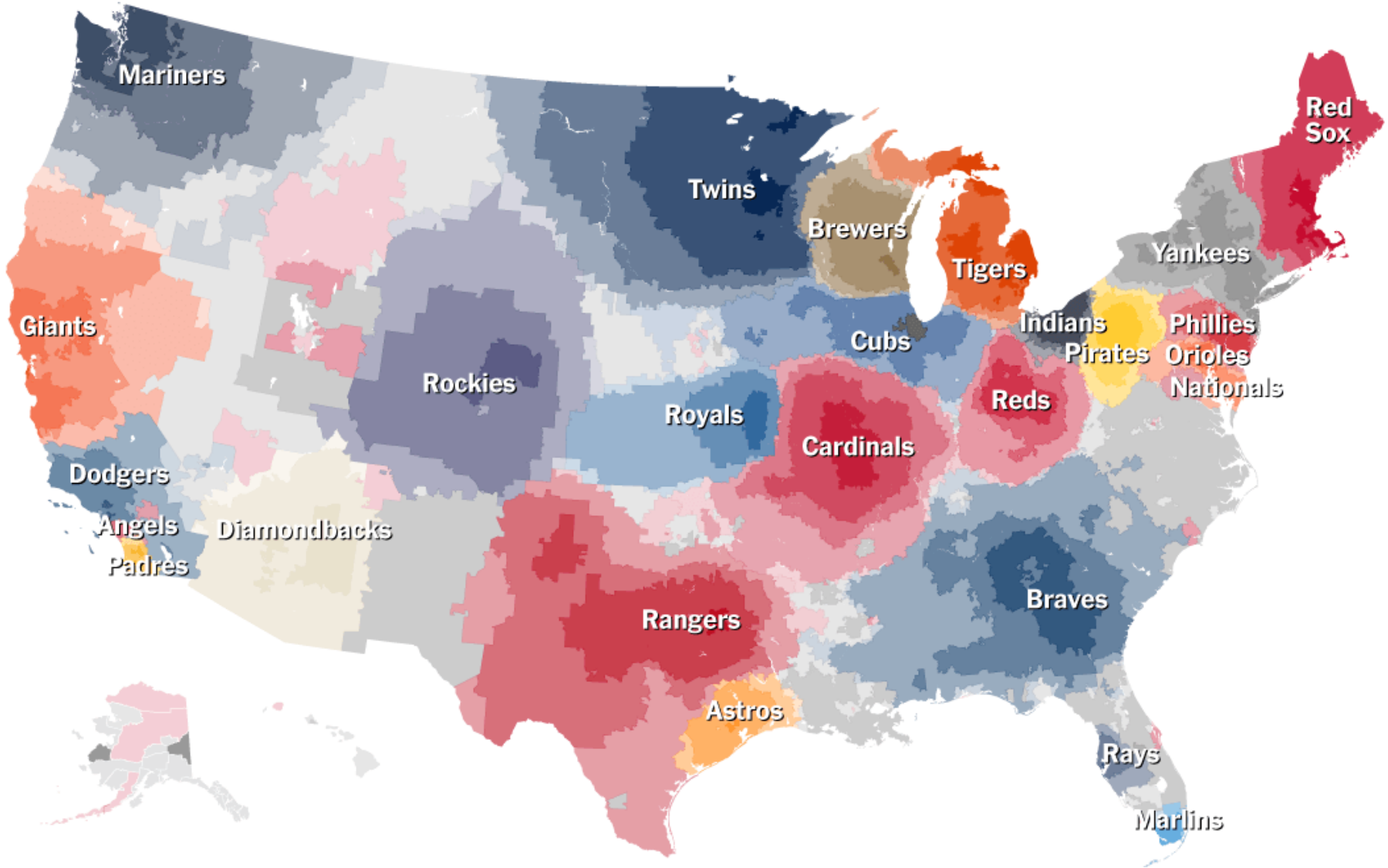


http://www.technologyreview.com/news/418943/can-social-networks-be-generated-automatically/

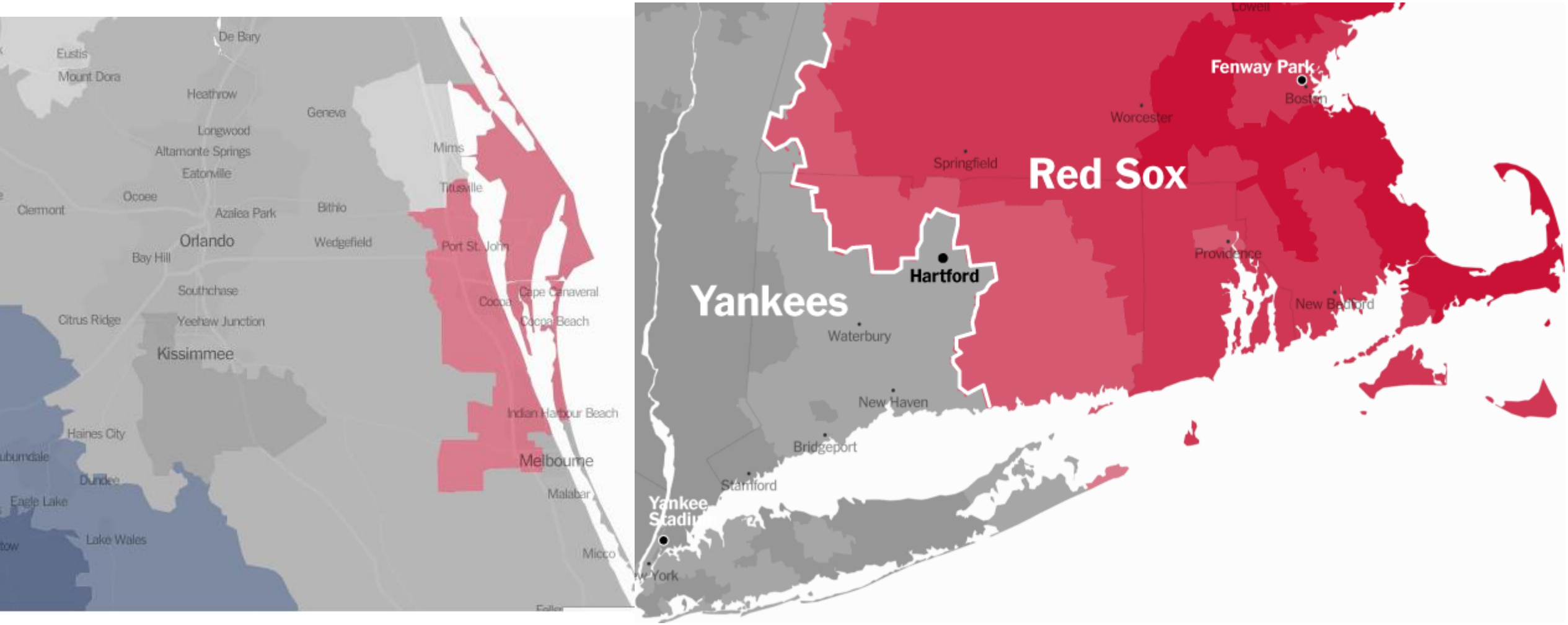
Evolution of Automated Breaking News Stories

http://www.technologyreview.com/view/525911/the-evolution-of-automated-breaking-news-stories/

Up Close on Baseball's Borders

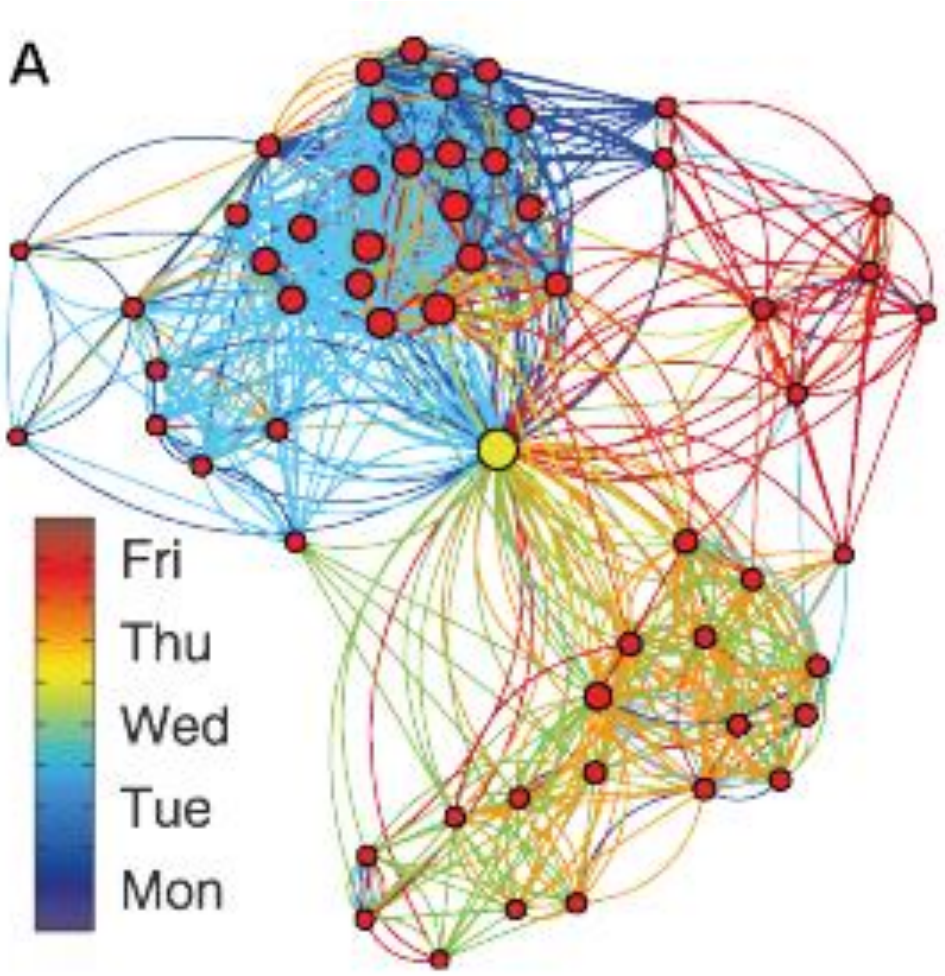


http://nyti.ms/1jlxOTf



- From New York Times

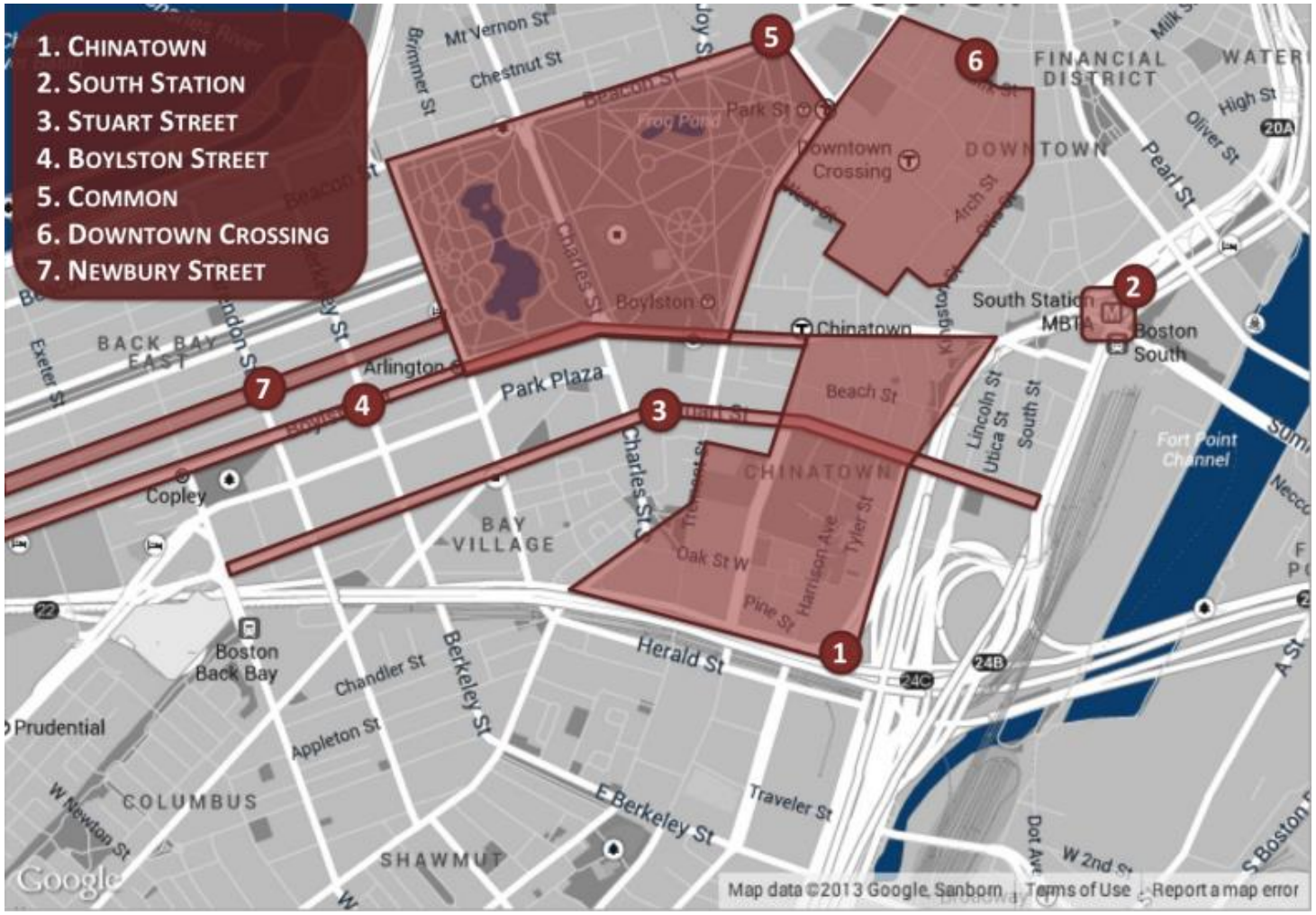
Strangers: Society's Hidden Social Network



http://www.technologyreview.com/view/516846/the-science-of-familiar-strangers-societys-hidden-social-network/

Fingerprint Enhancement

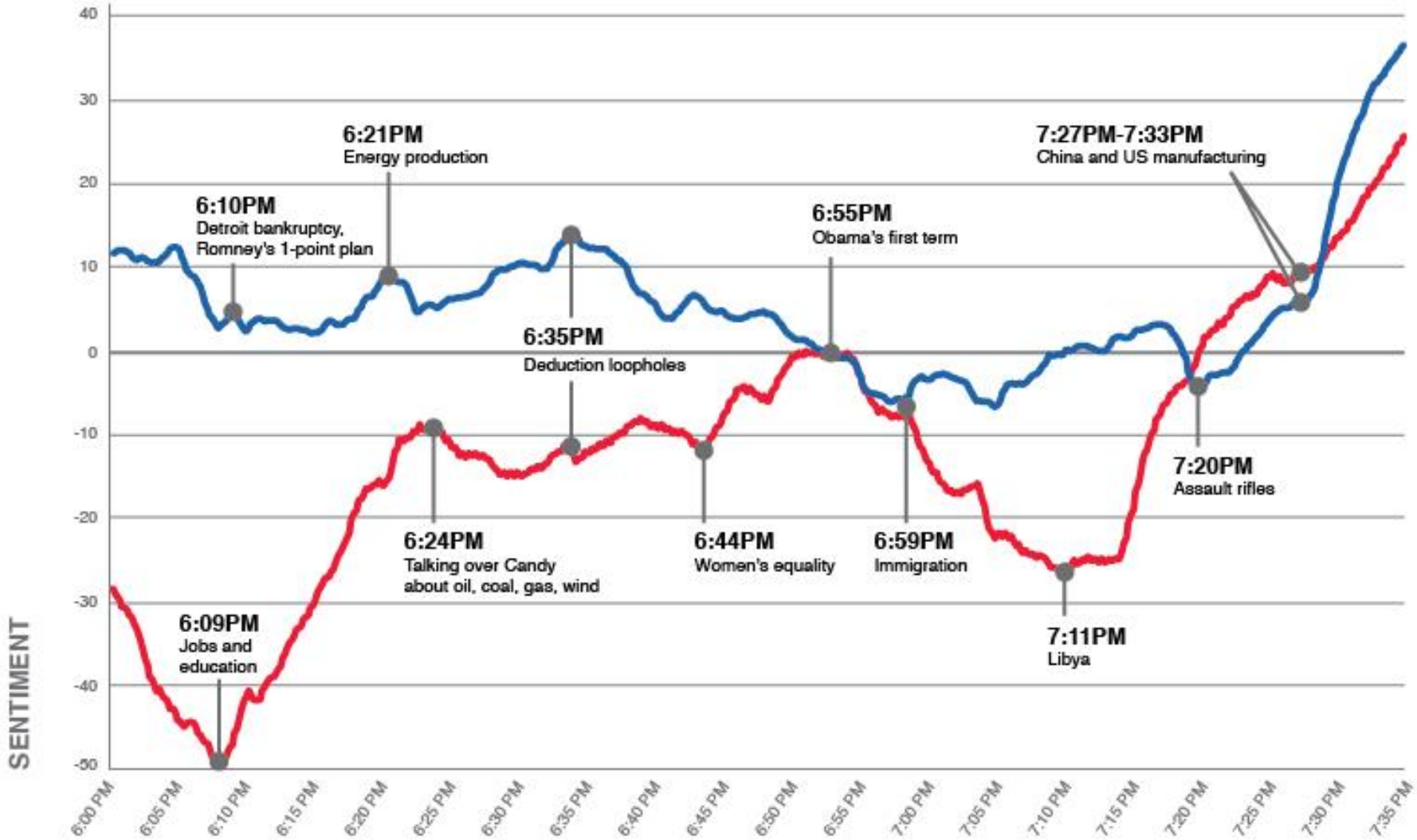
Hot places?



Map of Boston with seven frequently mentioned places

NETBASE 2012 ELECTION MOOD METER

Presidential Debate – October 16, 2012



TIME (PST)

Romney Obama

Based on Twitter data. Powered by NetBase.

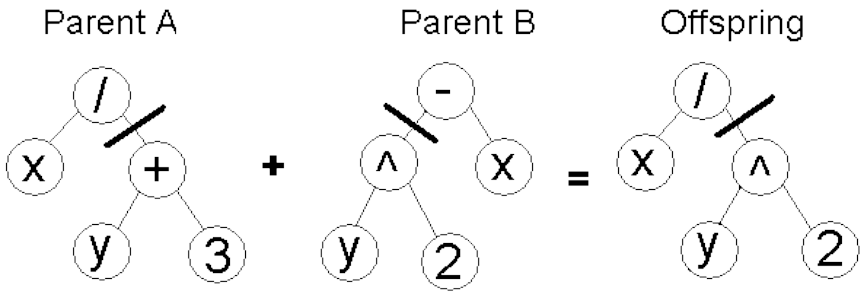
NETBASE

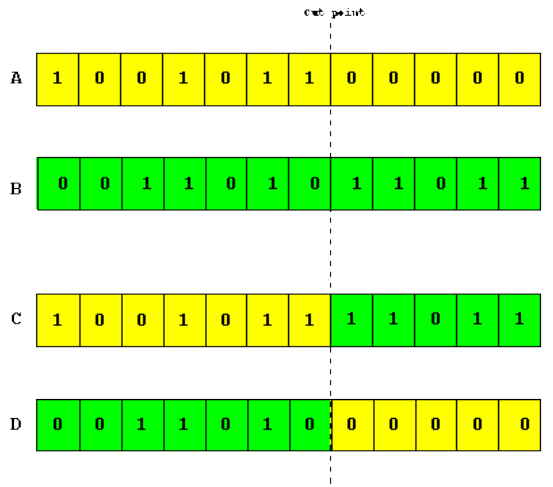
Game Character Selection

Genetic Algorithms?

- Genetic algorithm – is a search heuristic that mimics the process of natural selection.

- Genetic algorithms belong to the larger class of evolutionary algorithms, which generate solutions to optimization problems using techniques inspired by natural evolution, such as inheritance, mutation, selection, and crossover.





High-Frequency Trading

"A program trading platform that uses powerful computers to transact a large number of orders at very fast speeds. High-frequency trading uses complex algorithms to analyze multiple markets and execute orders based on market conditions. Typically, the traders with the fastest execution speeds will be more profitable than traders with slower execution speeds."

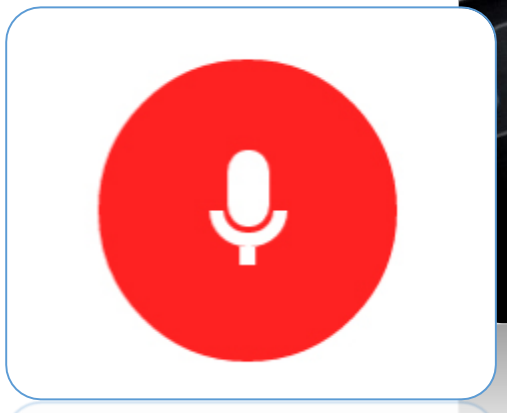
-Investopedia

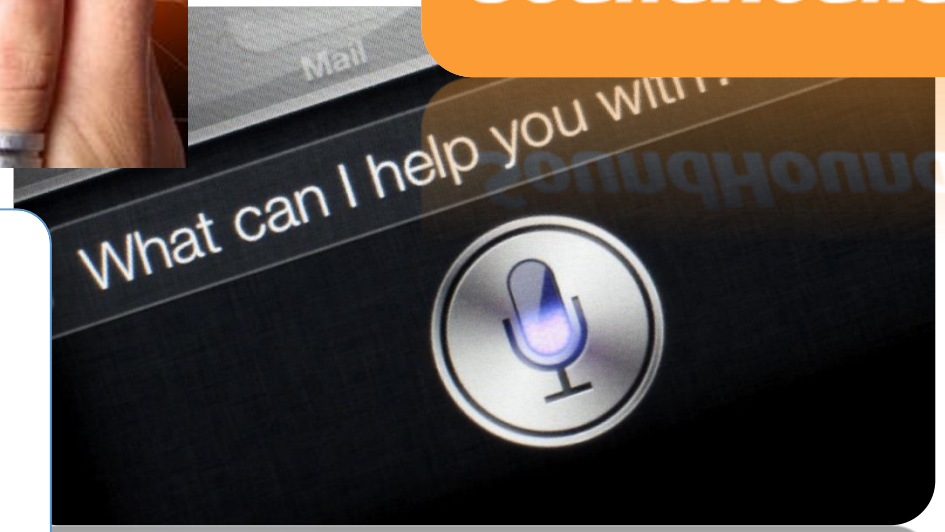
Ant-Colony Optimization Algorithms (ACO)

Solving computational problems by translating/transforming them to path-finding problems on a graph.

Original idea of ACOs: to search for an optimal path in a graph, based on the behavior of ants seeking a path between their colony and a source of food

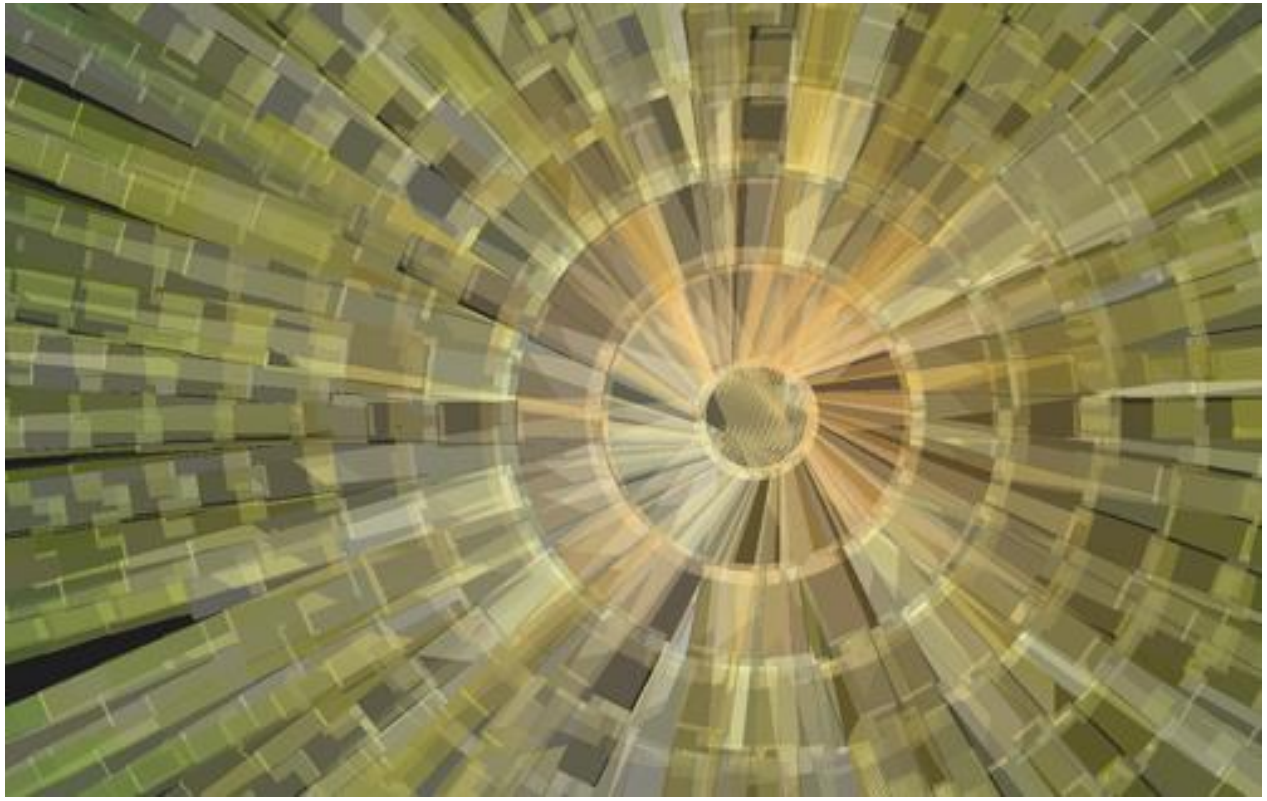
Speech Recognition

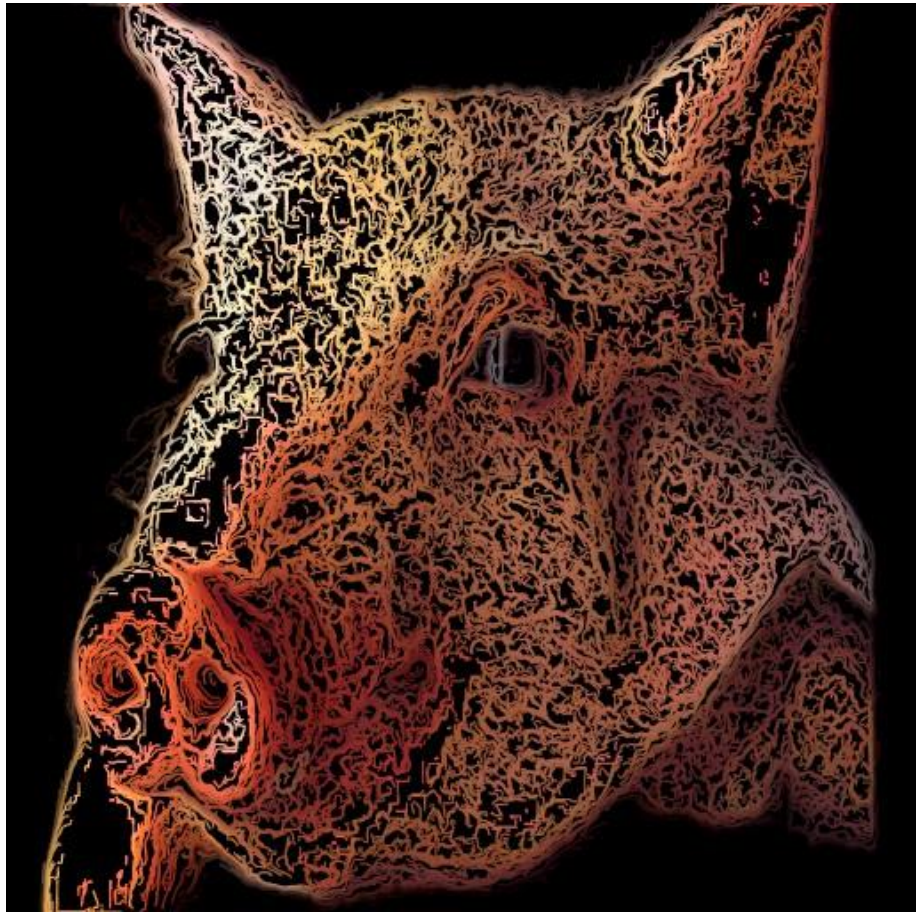




Algorithmic Art

- Computer-generated art where the design is created by using an algorithm





Seam Carving

Scaling

Cropping

Seam Carving

Scaling squishes the castle and cropping sacrifices important features.

Game Learning

Game Learning

Game Learning

Nickname	Miley Cyrus					Species	Jynx			Scene Xp	0
Level	22		Total EXP	531	To Next Lvl	69	Gender	Female		# Pkmn	1
Nature	Naughty		+2	ATK	-2	SDEF	Shiny?	Normal		Modifiers	1
Type	ICE	PSYCHC	Skills:	Athl 3d6, Acro 3d6+2, Combat 3d6, Stealth 2d6, Percep 3d6+1, Focus 3d6+2						New Total	531

Stat	Species	Mod	Base	Added	Total	Stage	Adj.	Max HP	Injuries	Injured HP	Current HP	Tick
HP	7		7	5	12	--	--	68		68		6
ATK	7		7	3	10		10	Evasion Bonuses			Vitamins:	
DEF	4		4	1	5		5	Vs ATK		1		
SATK	12		12	9	21		21	Vs SATK		2		
SDEF	8		8	4	12		12	Vs Any		4		
SPD	10		10	10	20		20	Notes:				

Held Item:			Pts Left:	0	Tutor Pts	Earned	Spent	Egg Group		Likes	Dislikes
Status Afflictions:					5	5		Humanshape	-	Spicy	Bitter

Inherited Moves			
Learned:		Remaining:	1

Movelist

Name	Type	Category	DB	Damage Roll	Frequency	AC	Range	Effect	Contest Stats
Struggle	NORMAL		4	1d8+6 + 10	At-Will	4	Melee, 1 Target	--	--
Sing	NORMAL		--	-- -- --	Scene	10	Burst 2, Friendly, Sonic	All legal Targets fall Asleep. On a miss, Sing instead causes targets to become Slowed and suffer a -2 penalty to their Evasion until the end of the user's next turn.	Cute - Excitement
Lovely Kiss	NORMAL		--	-- -- --	Scene x2	6	6, 1 Target, Social	The target fall Asleep.	Beauty - Excitement
Heart Stamp	PSYCHC		8	2d8+10 + 10	EOT	2	Melee, 1 Target	Heart Stamp Flinches the target on 15+.	Cute - Steady Performance
Lick	GHOST		3	1d6+5 + 10	At-Will	2	Melee, 1 Target	Lick Paralyzes the target on 15+.	Tough - Inversed Appeal
Hyper Voice	NORMAL		9	2d10+10 + 21	Scene x2	2	Close Blast 3, Sonic, Smite	All legal targets are pushed back to the squares immediately outside the blast, away from the user.	Cool - Steady Performance
Swagger	NORMAL		--	-- -- --	EOT	4	6, 1 Target, Social	Raise the target's Attack by +2 CS. The target is Confused.	Cute - Excitement
LOCKED	#N/A	#N/A	#N/A	#N/A #N #N/A	#N/A	#N/A	#N/A	#N/A	#N/A

Type Effectiveness

Type 1	FIGHT	FLYING	POISON	GROUND	ROCK	BUG	GHOST	STEEL	FIRE
Ice	1	1	1	1	1.5	1.5	1.5	1.5	1.5
Type 2	WATER	GRASS	ELECTR	PSYCHC	ICE	DRAGON	DARK	NORMAL	FAIRY
Psychic	1	1	1	0.5	0.5	1	1.5	1	1

Capabilities

Overland	5	Levitate	0	Power	4	Naturewalk
Sky	0	Burrow	0	Weight	3	Tundra
Swim	3	Jump (L/H)	1 / 2	Size	Medium	

Other Capabilities

Freezer	Telepath	-	-	-		
Telekinetic	-	-	-			

Poké Edges

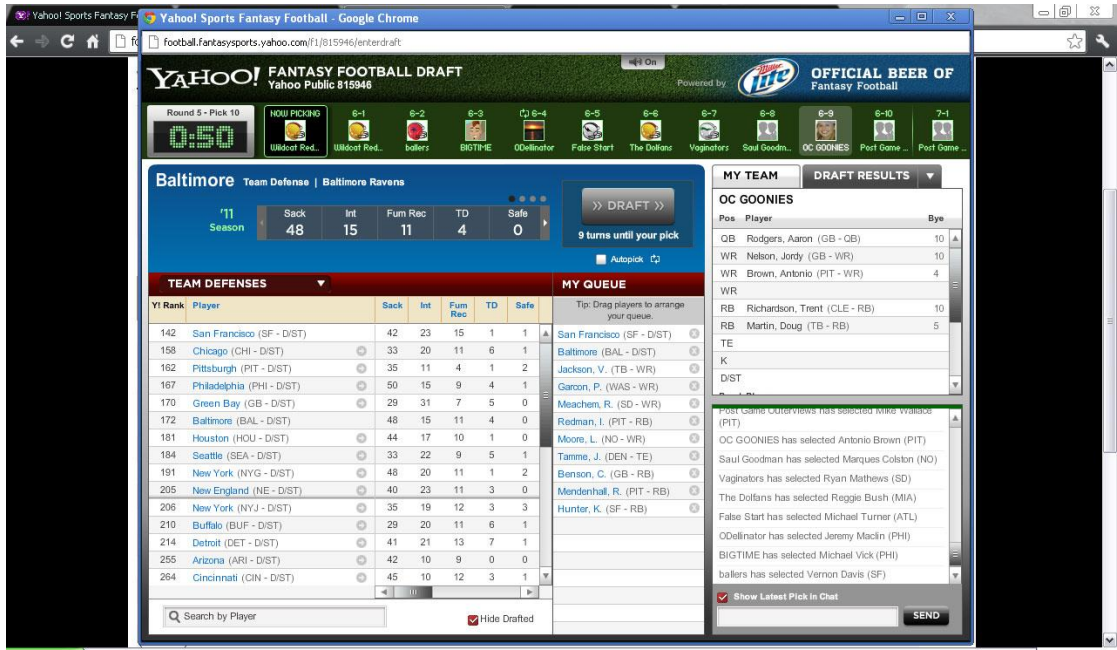
Name	Effect
	--
	--

Abilities

Name	Frequency	Effect
Oblivious	Static	The user is immune to the Enraged and Infatuated conditions. Defensive.
Dry Skin	Static	Whenever the user is hit by a damaging Fire-Type Move or ends their turn in Sunny Weather, they lose a Tick of Hit Points. The user is immune to the damage and effects of Water-Type Moves, and whenever the user is hit by a damaging Water-Type Move or ends their turn in Rainy Weather, they gain a Tick of Hit Points.

Fantasy Football Draft

- Select offensive position players, Defensive Team, and Kicker to fill a team
- Objective is try to get a team to maximize points score every week (points based on player's statistics: Touchdowns, yardage, etc.)
- Can only start a certain amount of players at each position (generally 1 QB, 2 RB, 2 WR, 1 TE)

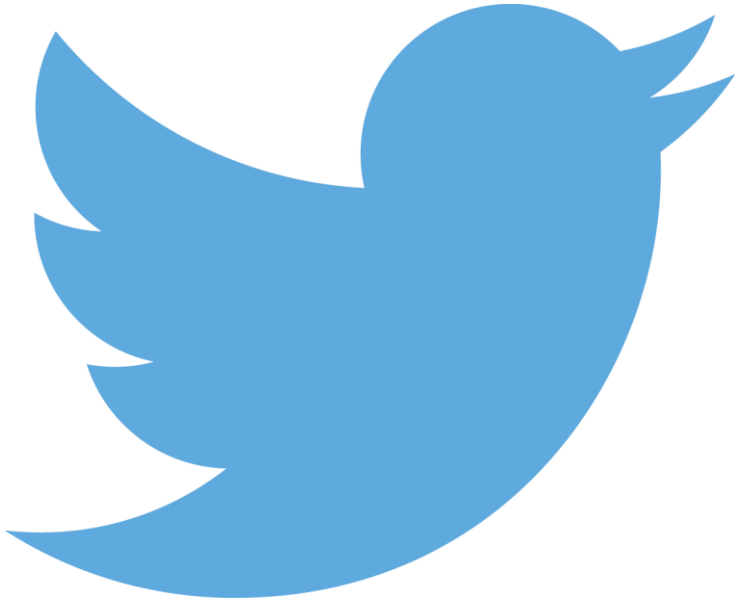


A Reddit Recommender?

How can you find a subreddit based on your interests?

Answer: A recommender system, a program that predicts items which a user might rate highly or prefer

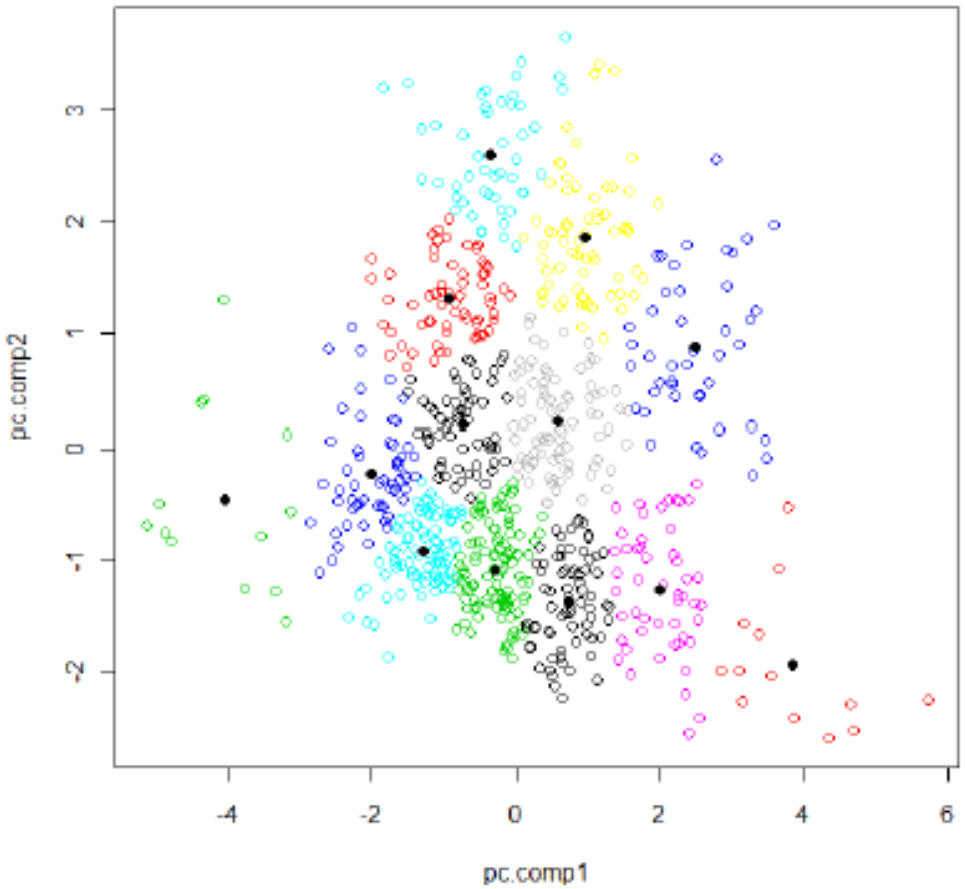
How hot is your hashtag?



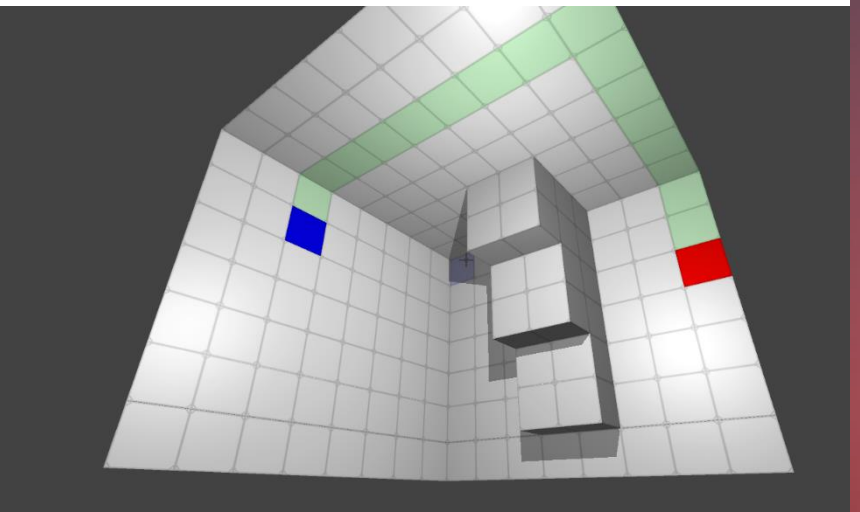
- How influential are hashtags?
- **project:** design an algorithm to find which hashtags on Instagram are the most popular based on different criteria:
- Likes, comments, followers,
  - & possibly: time of day, filter, etc.

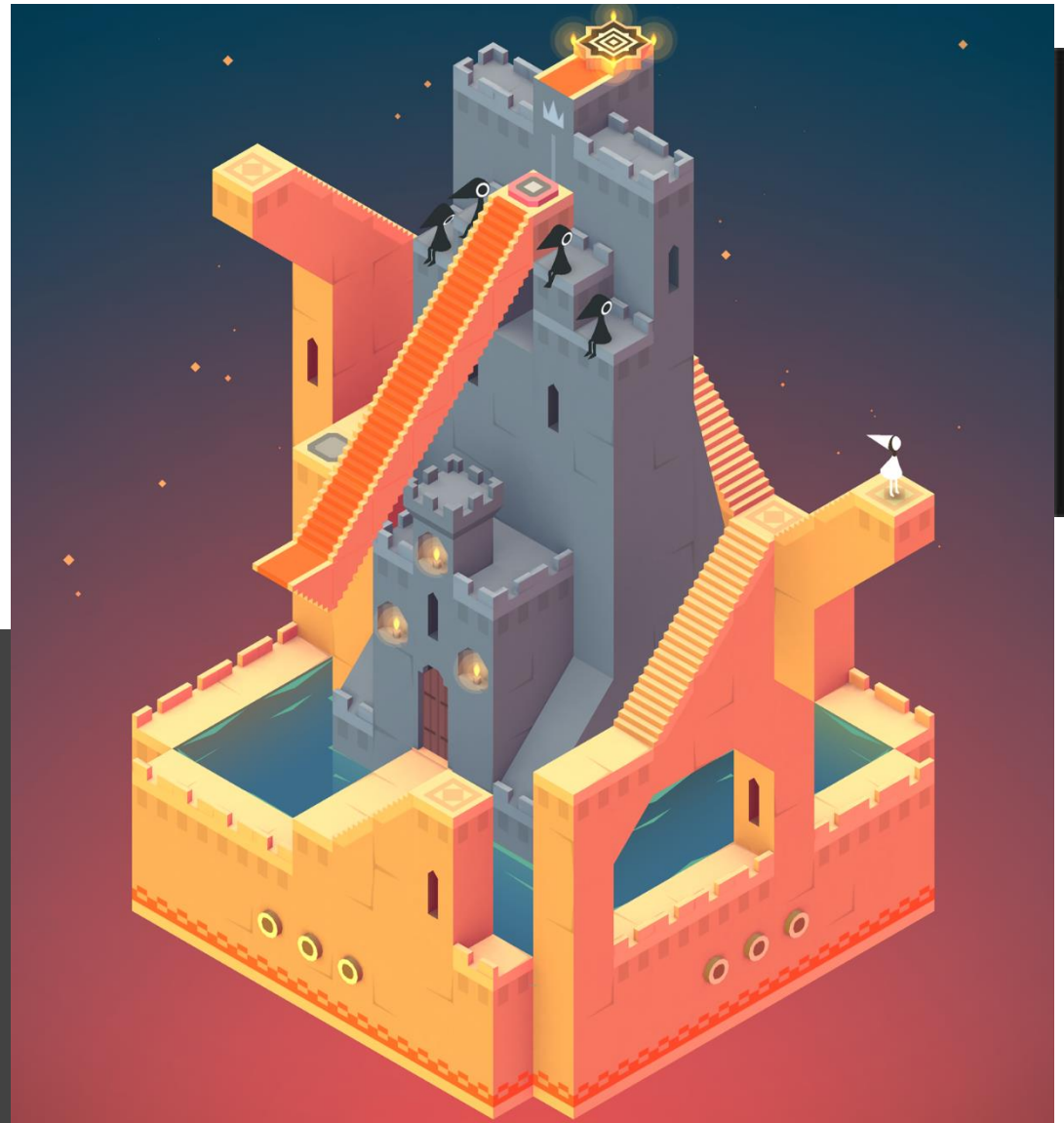
K-means++

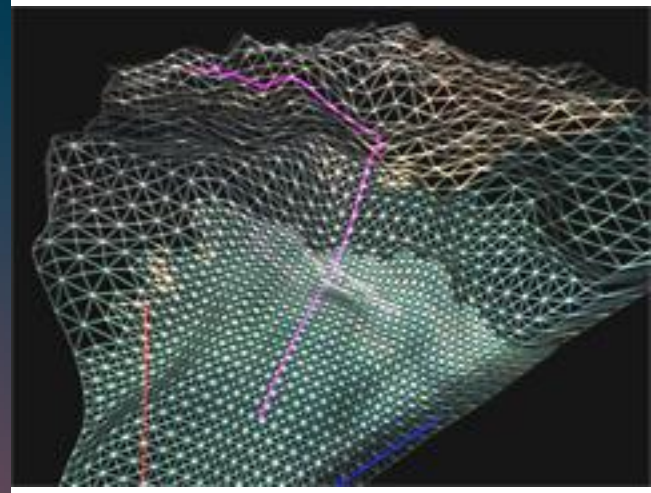
- More involved initialization
- Choose one center randomly
- Calculate distance from center to all points
- Other changes?



3D Pathfinding



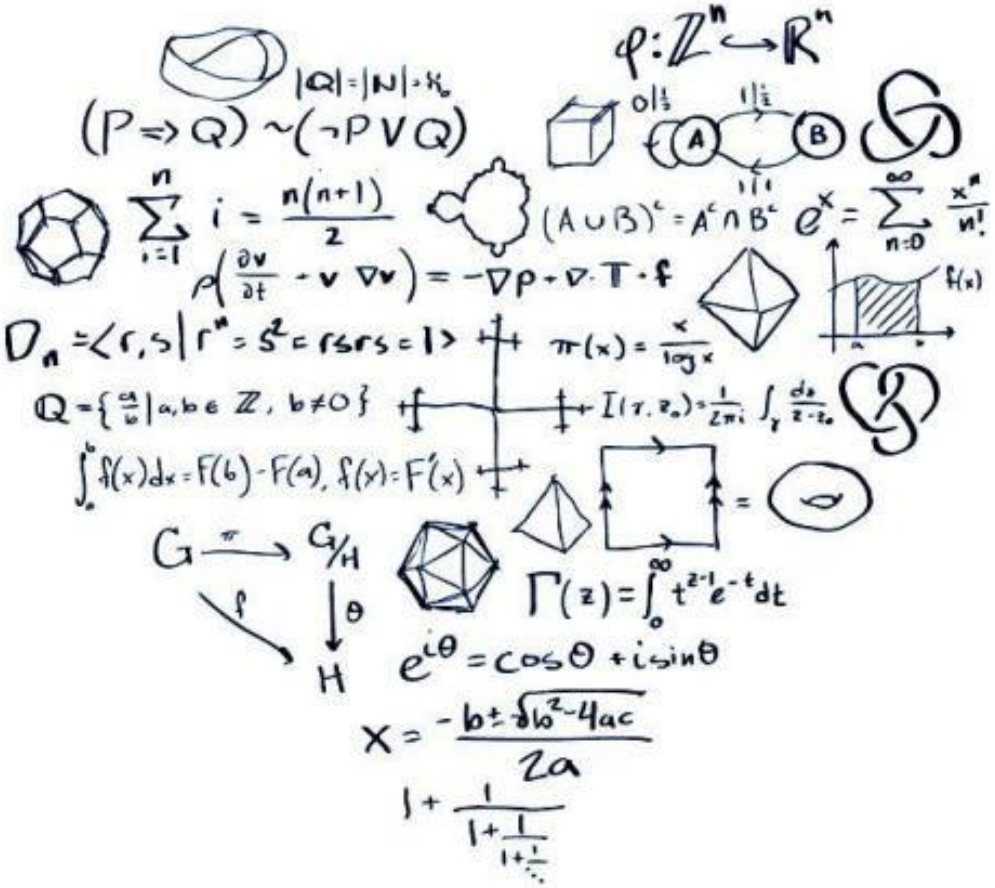




Optimal Selfie Algorithm

Online Dating Algorithms

- Personal characteristics and desires
- Characteristics and desires of similar people
- “Strength” of preferences
- Historical data
- Self-reporting bias

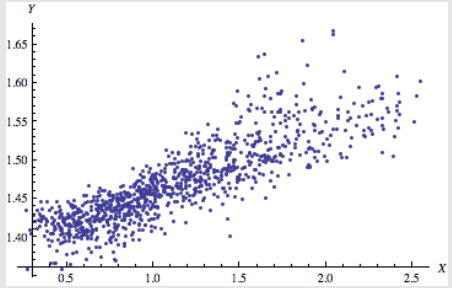


Grocery Predictor

Process

Step 1:
Parsing Data

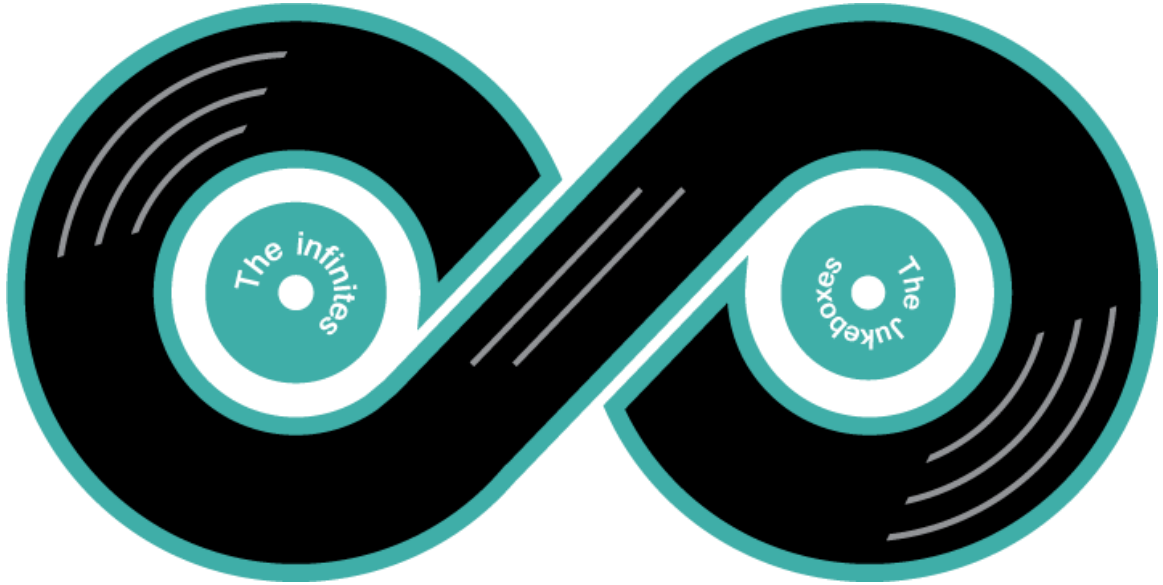
Step 2:
Finding Trends



Step 3:
Calculating Value

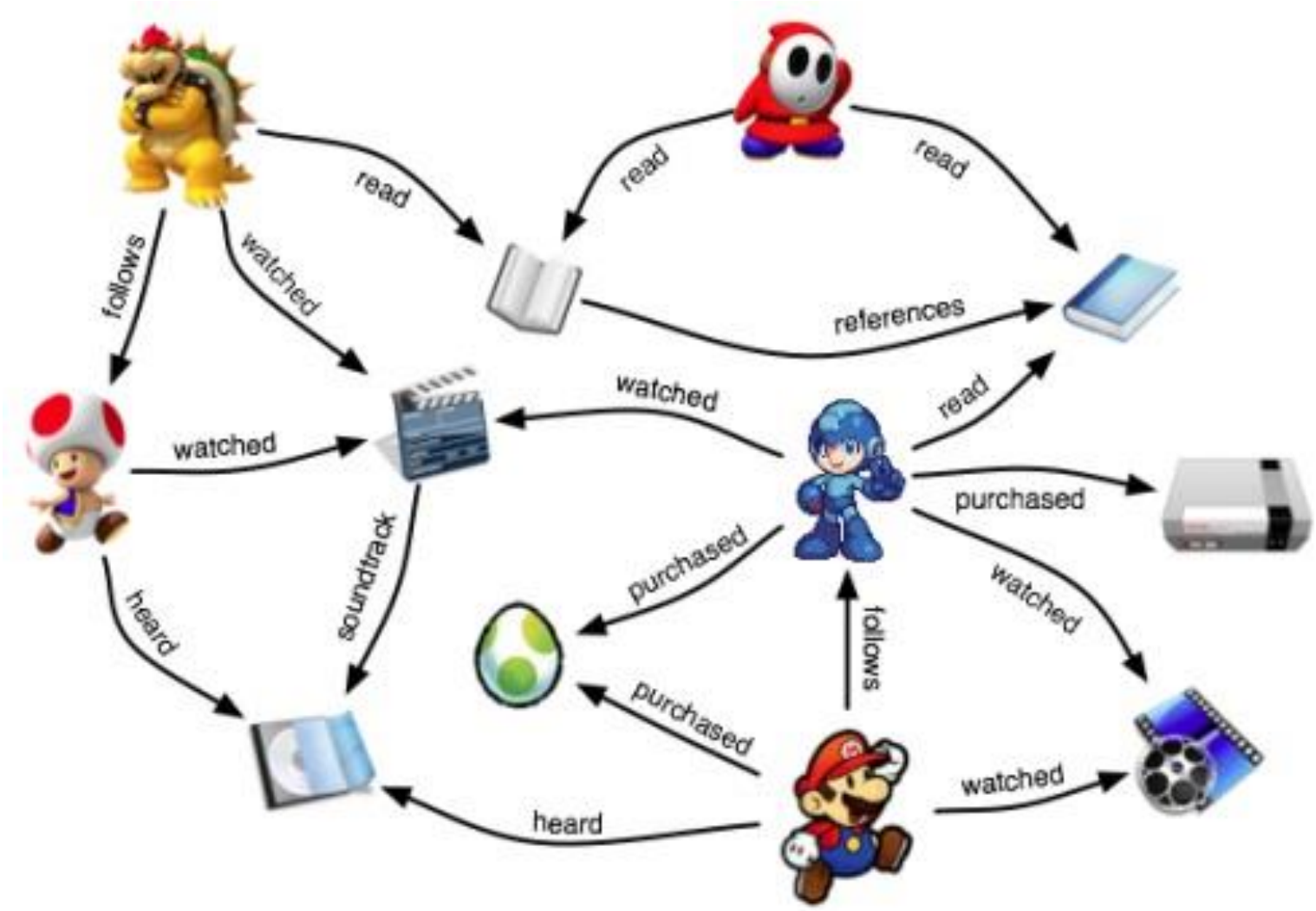
Step 4:
Making a List

The Infinite Jukebox

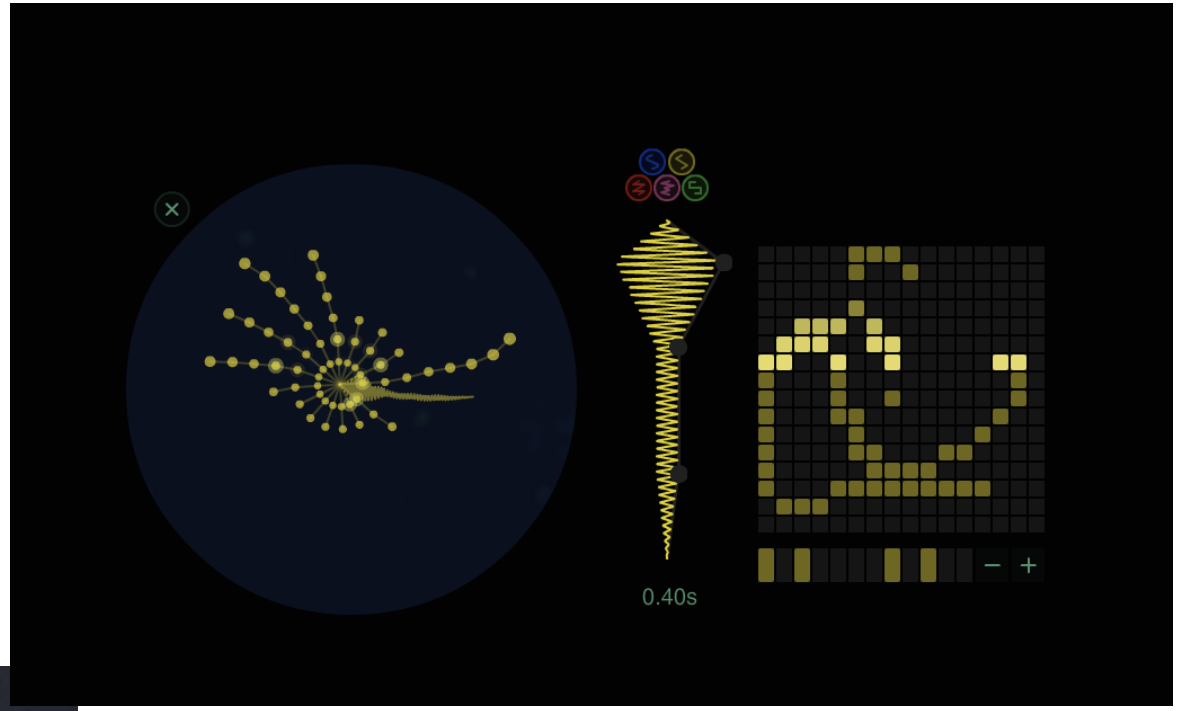


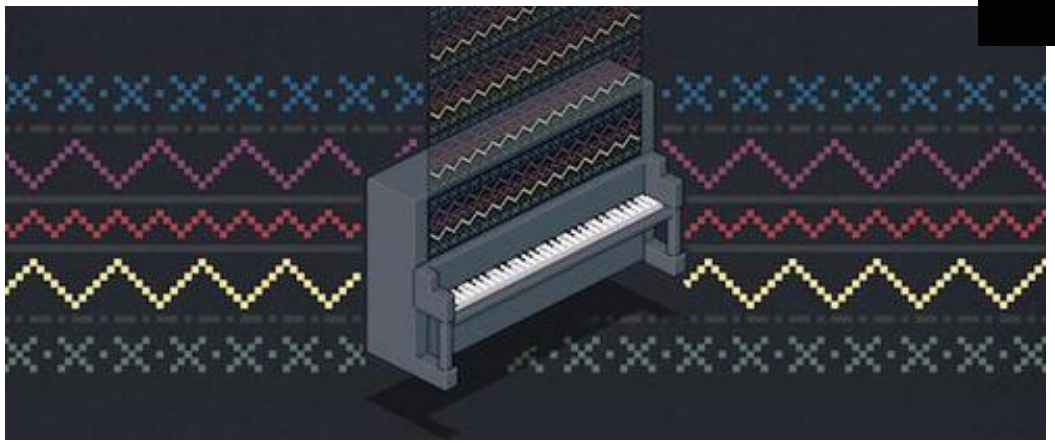
http://labs.echonest.com/Uploader/index.html

Recommender Systems

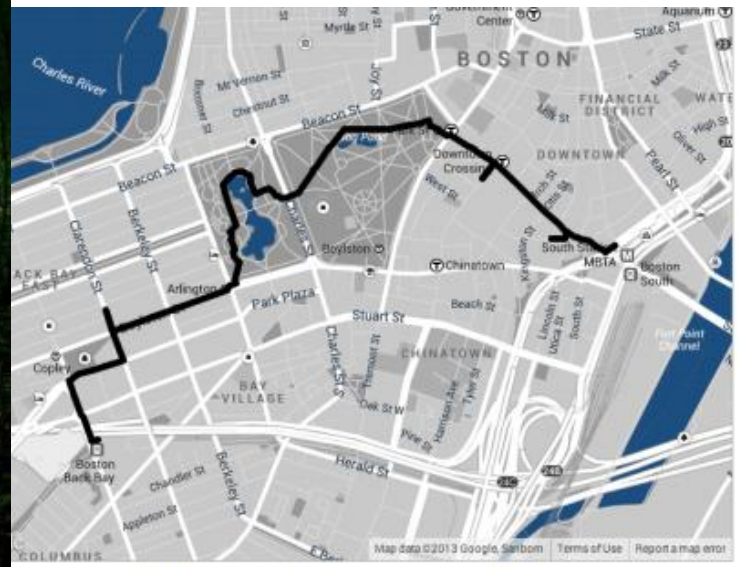


Algorithmic Composition

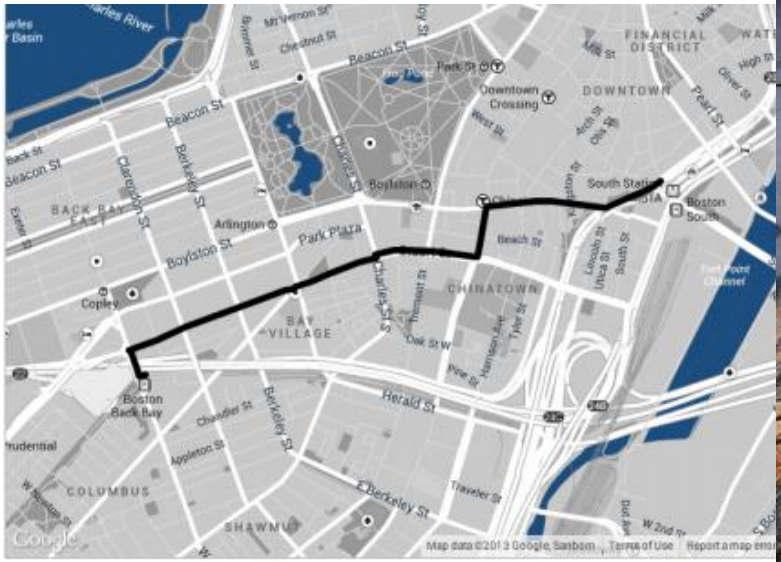




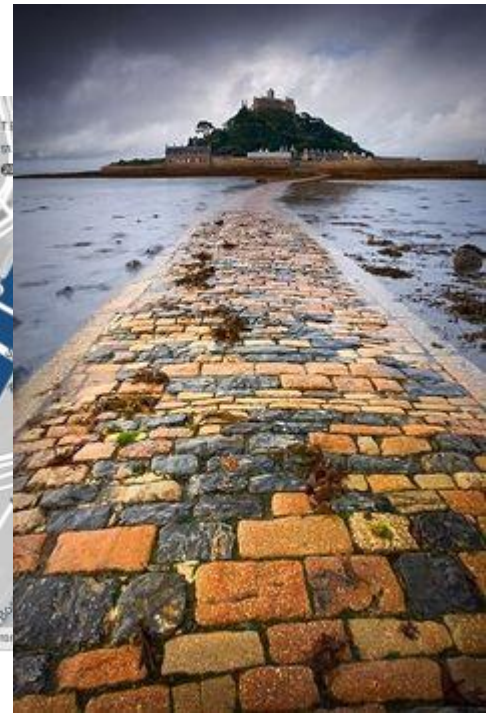
Most Beautiful Path Algorithm



(b) Flickr Beauty in Boston



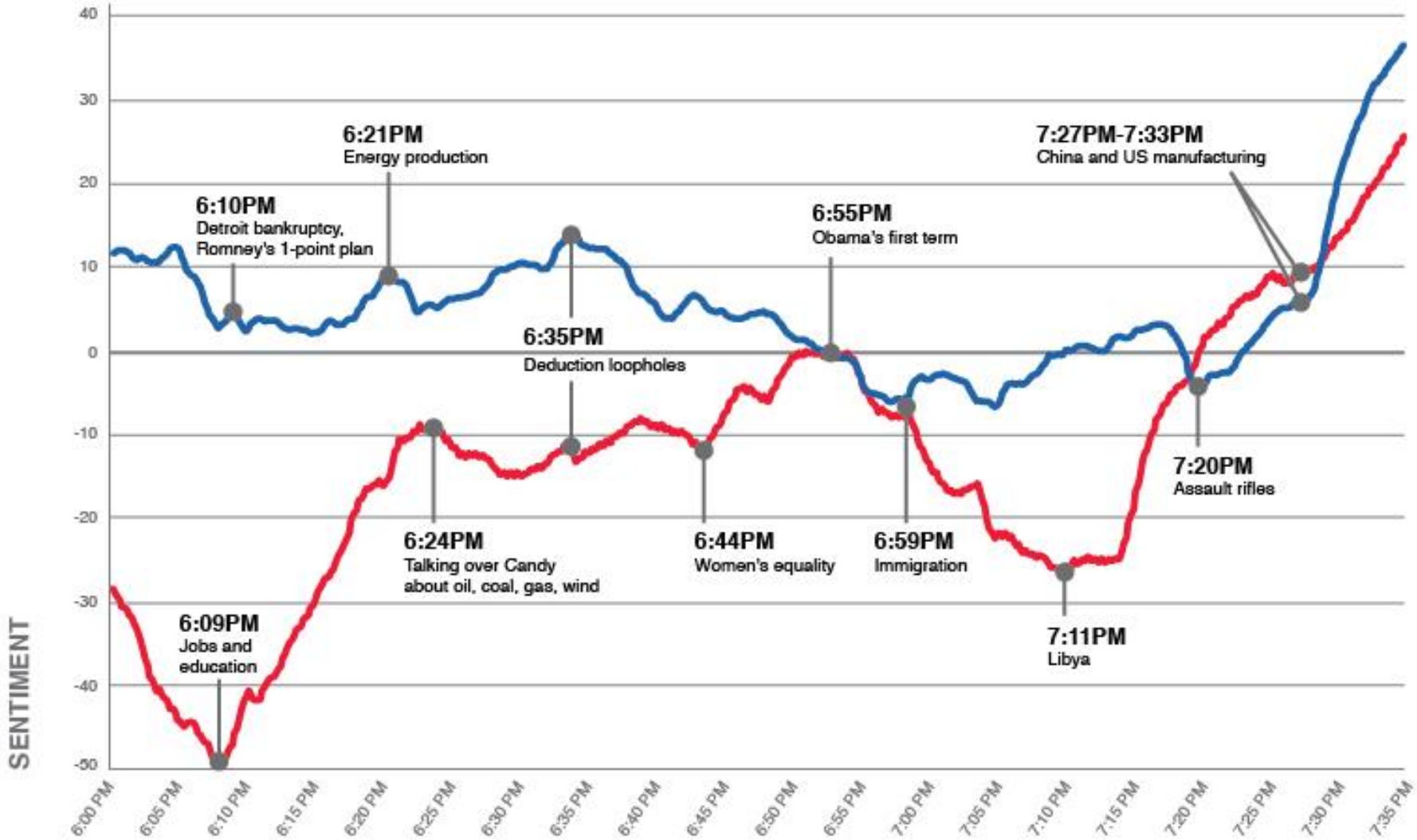
(c) Shortest in Boston



Twitter Sentiment Analysis

NETBASE 2012 ELECTION MOOD METER

Presidential Debate – October 16, 2012

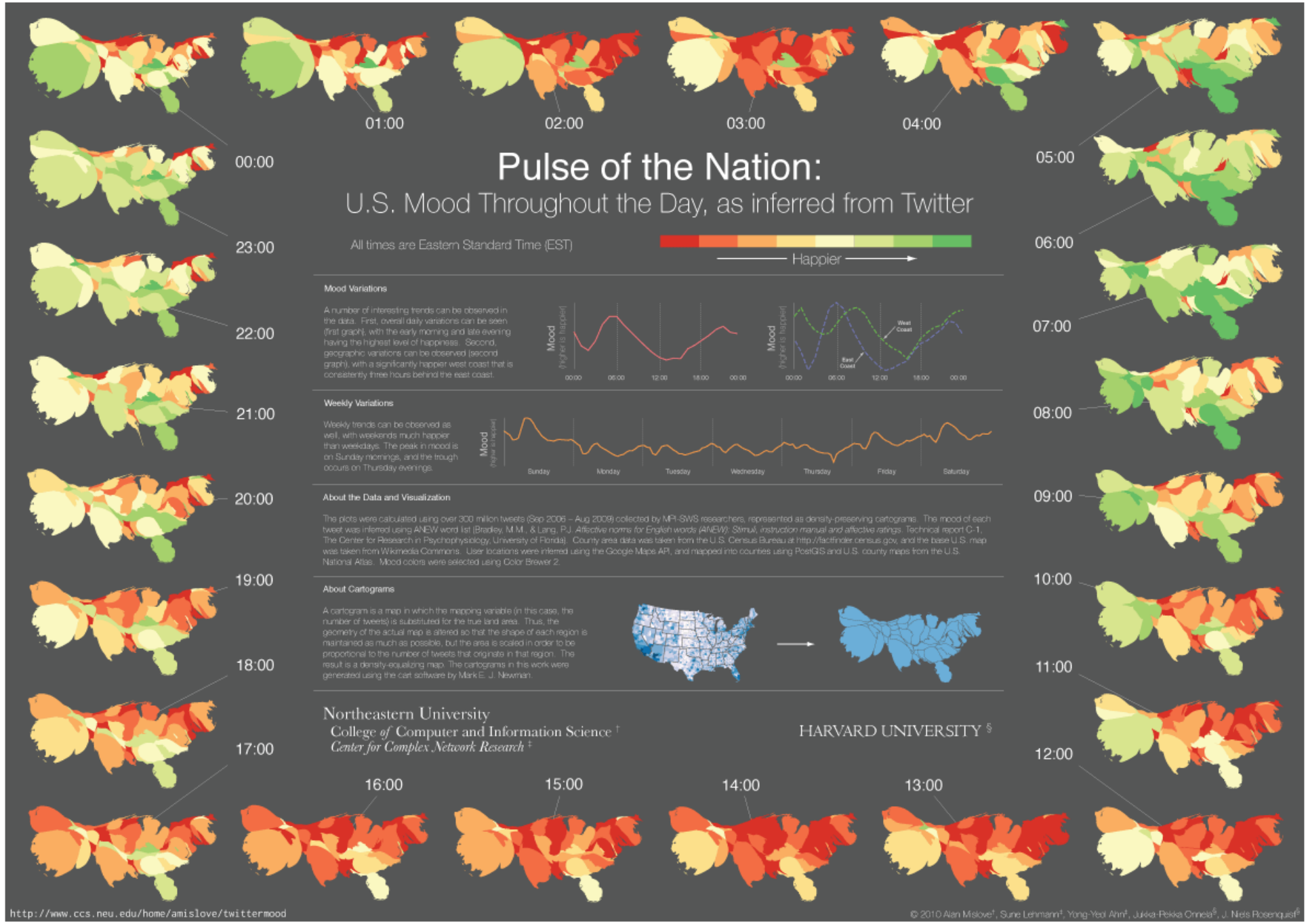


TIME (PST)

Romney Obama

Based on Twitter data. Powered by NetBase.

NETBASE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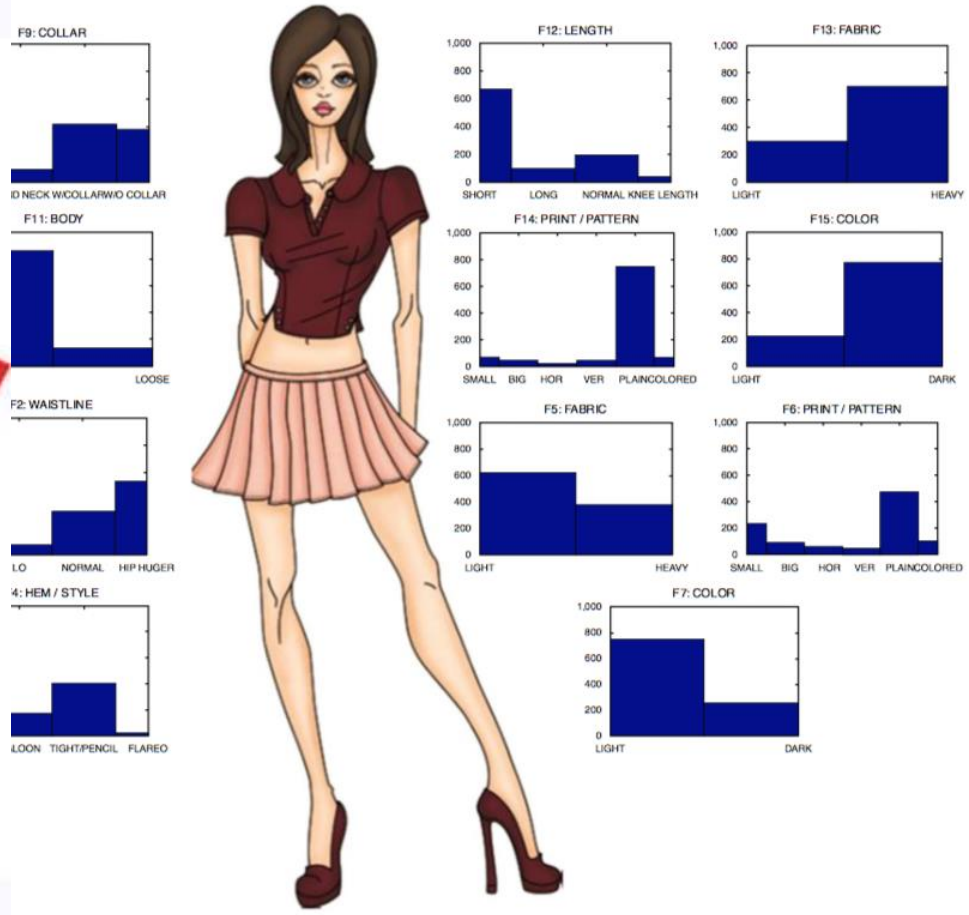
Pulse of the Nation:
U.S. Mood Throughout the Day, as inferred from Twitter
All times are Eastern Standard Time (EST)
Happier
Mood Variations
A number of interesting trends can be observed in the data. First, overall daily variations can be seen (first graph), with the early morning and late evening having the highest level of happiness. Second, geographic variations can be observed (second graph), with a significantly happier west coast that is consistently three hours behind the east coast.
Mood (higher is happier)
West Coast
East Coast
Weekly Variations
Weekly trends can be observed as well, with weekends much happier than weekdays. The peak in mood is on Sunday mornings, and the trough occurs on Thursday evenings.
Sunday
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday
About the Data and Visualization
The plots were calculated using over 300 million tweets (Sep 2006 – Aug 2009) collected by MPI-SWS researchers, represented as density-preserving cartograms. The mood of each tweet was inferred using ANEW word list (Bradley, M.M., & Lang, P.J. Affective norms for English words (ANEW): Stimuli, instruction manual and affective ratings. Technical report C-1, The Center for Research in Psychophysiology, University of Florida). County area data was taken from the U.S. Census Bureau at http://factfinder.census.gov, and the base U.S. map was taken from Wikimedia Commons. User locations were inferred using the Google Maps API, and mapped into counties using PostGIS and U.S. county maps from the U.S. National Atlas. Mood colors were selected using Color Brewer 2.
About Cartograms
A cartogram is a map in which the mapping variable (in this case, the number of tweets) is substituted for the true land area. Thus, the geometry of the actual map is altered so that the shape of each region is maintained as much as possible, but the area is scaled in order to be proportional to the number of tweets that originate in that region. The result is a density-equalizing map. The cartograms in this work were generated using the cart software by Mark E. J. Newman.
Northeastern University
College of Computer and Information Science †
Center for Complex Network Research ‡
HARVARD UNIVERSITY §
http://www.ccs.neu.edu/home/amislove/twittermood
© 2010 Alan Mislove†, Sune Lehmann‡, Yong-Yeol Ahn‡, Juuso-Pekka Onnela§, J. Niels Rosenquist§

Personal Fashion Algorithm



Progress Report

a) An account of how much work has been done on something and what still needs to be done
b) An assessment that conveys details such as what sub-goals have been accomplished, what problems have been encountered, and whether the project is expected to be completed on time.

- http://www.businessdictionary.com/definition/progress-report.html


CcDdEeFfGgHhIiJjKkLlMmNnOoPpQq
Show + Tell


FOR "SHOW AND TELL" TODAY, I DON'T HAVE ANYTHING TO SHOW.
BUT I'LL TELL YOU THAT, WHEN I'M AT SCHOOL, MY MOM PUTS ON A PATRIOTIC LEOTARD, A CAPE, AND KNEE-HIGH, HIGH-HEELED BOOTS, AND SHE FIGHTS CRIME AS A SUPER HEROINE.
I HOPE YOU'RE ALL DULY IMPRESSED. THANK YOU VERY MUCH.
THAT'S THE NOTE HIS TEACHER SENT HOME WITH HIM.
WOW, SHOW ME THAT OUTFIT SOMETIME.

“In god we trust.
All others must
bring data.”

– W. Edwards Deming

Progress Report

A draft of the final report written in a scientific paper format.

The project progress reports must have:

- Abstract (10 %)
- Introduction (5 %)
- Code with Documentation (50%)
- Results (20 %)
- Discussion (10 %)
- References (5 %)