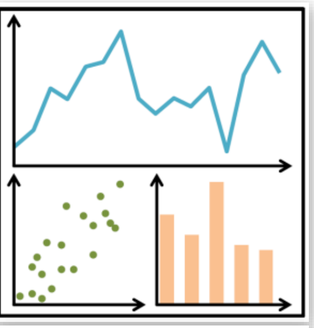
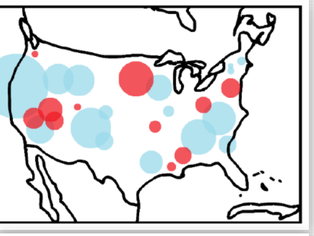
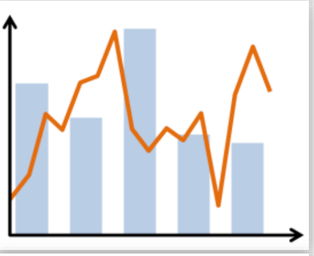
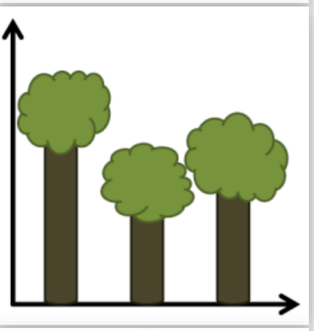
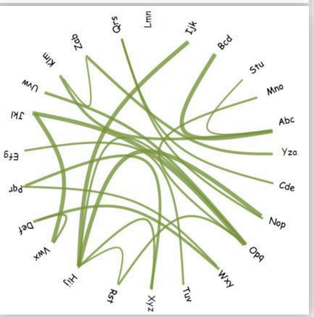






Lecture 2:
Design Rules of Thumb

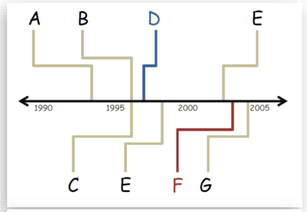
DS 4200

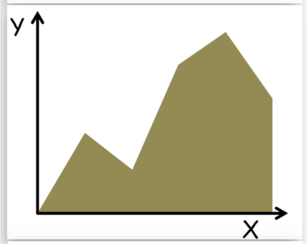
FALL 2020

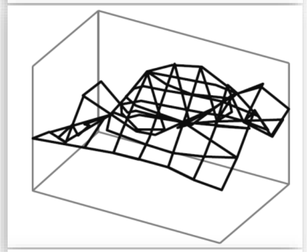
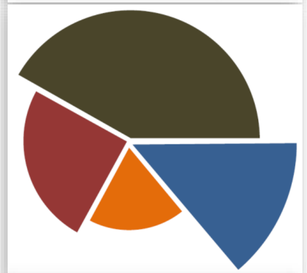
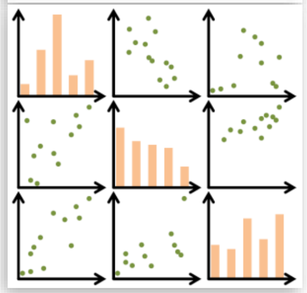
Prof. Cody Dunne

NORTHEASTERN UNIVERSITY

Slides and inspiration from Michelle Borkin, Krzysztof Gajos, Hanspeter Pfister, Miriah Meyer, Jonathan Schwabish, and David Sprague





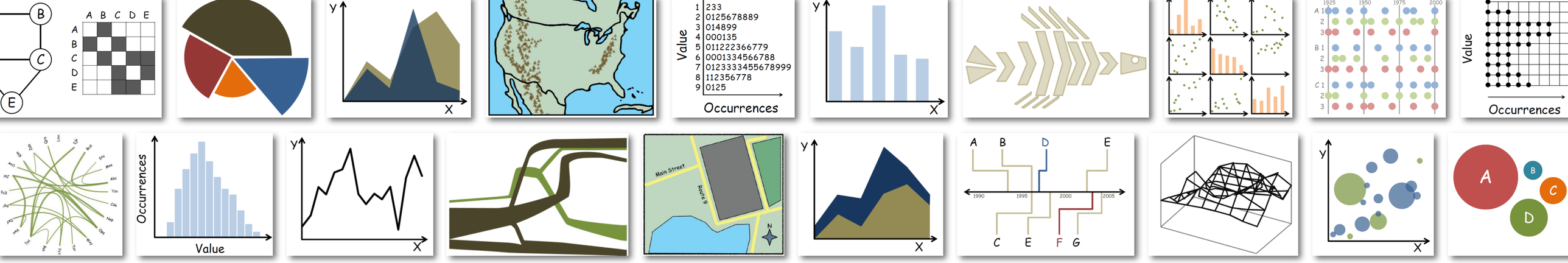




NUFLEX/COVID-19 CHECK-IN

Assignment 1a — Critique the Syllabus

Previously, on CS 7250…

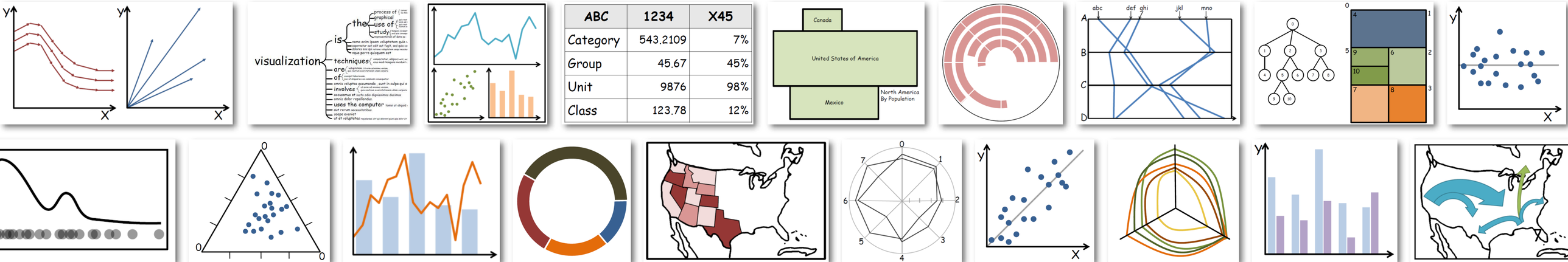
What is visualization anyway?

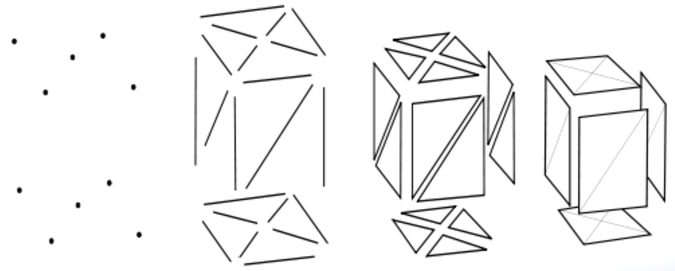


(static or interactive)

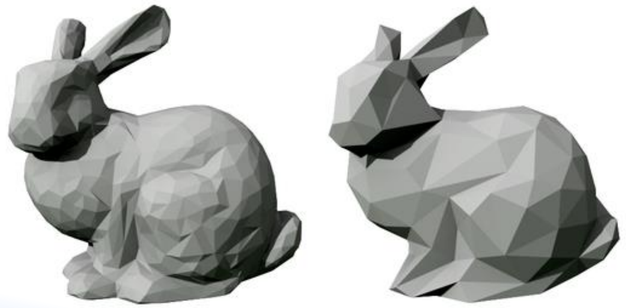
(abstract or spatial)

visualization: the visual representation of data to reinforce human cognition





computer graphics



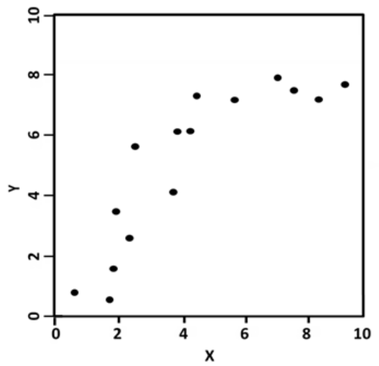
HCI

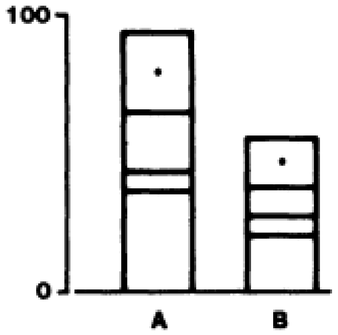
design

visualization

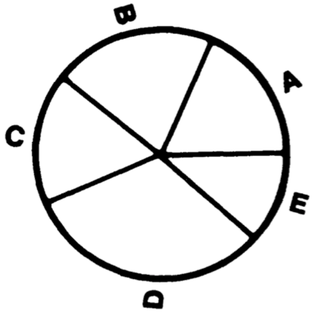
psychology

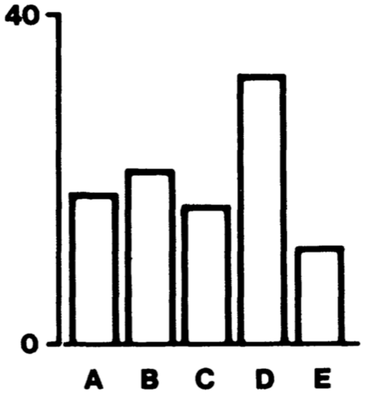
art





statistics





Staff Introductions

Cody Dunne
Assistant Professor
Instructor

Megha Rao
TA

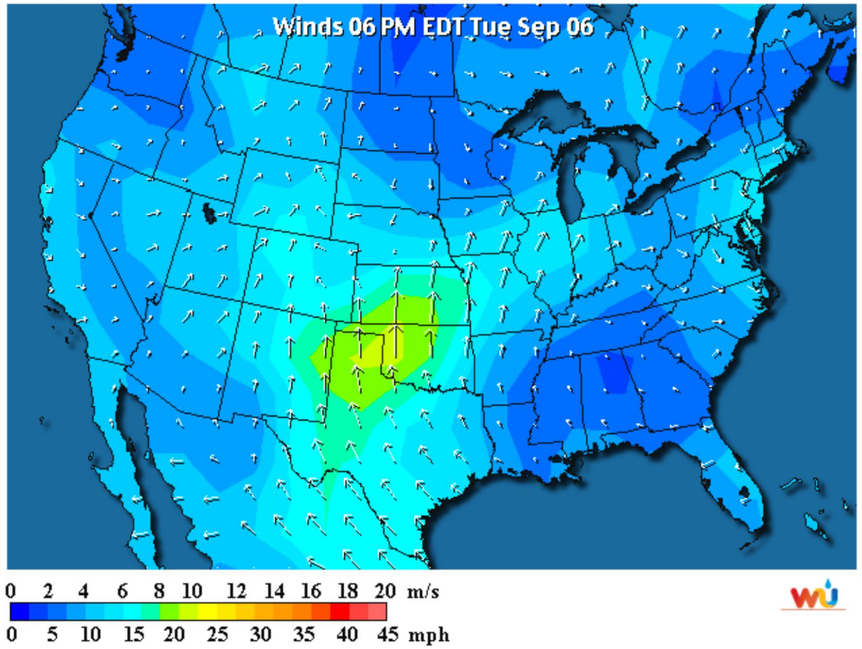
David Saffo, CS PhD
TA (Primary)

Eduardo Massud
IA

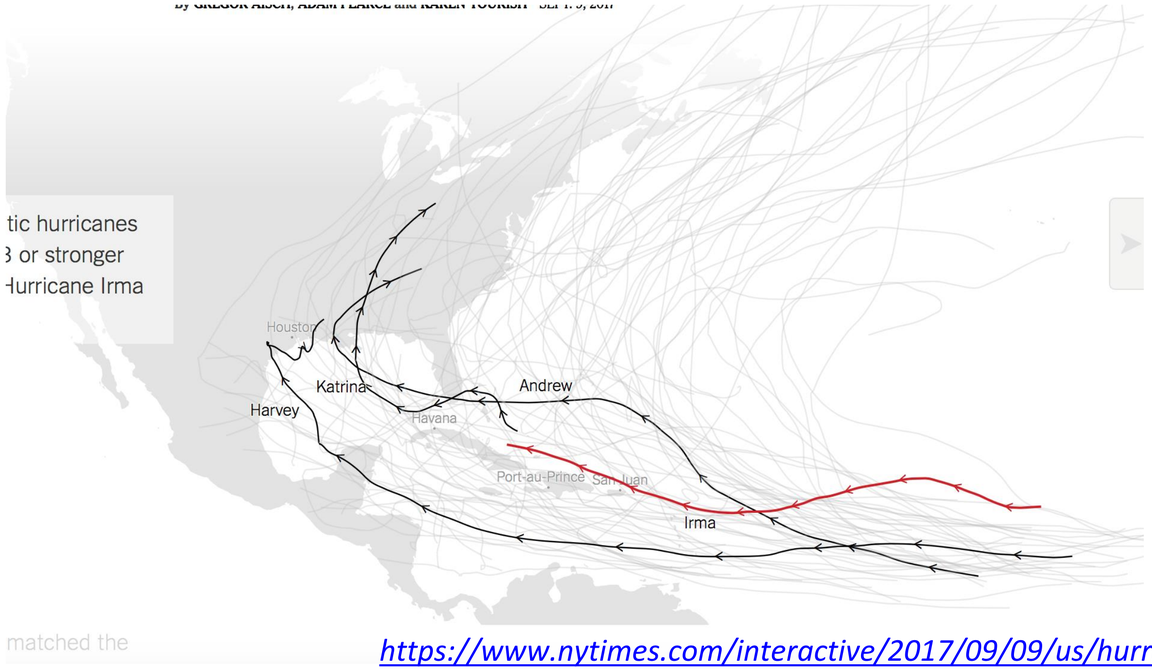
Course Homepage on Canvas

https://c.dunne.dev/ds4200f20

Canvas first!



http://hint.fm/wind/gallery/oct-29.js.html



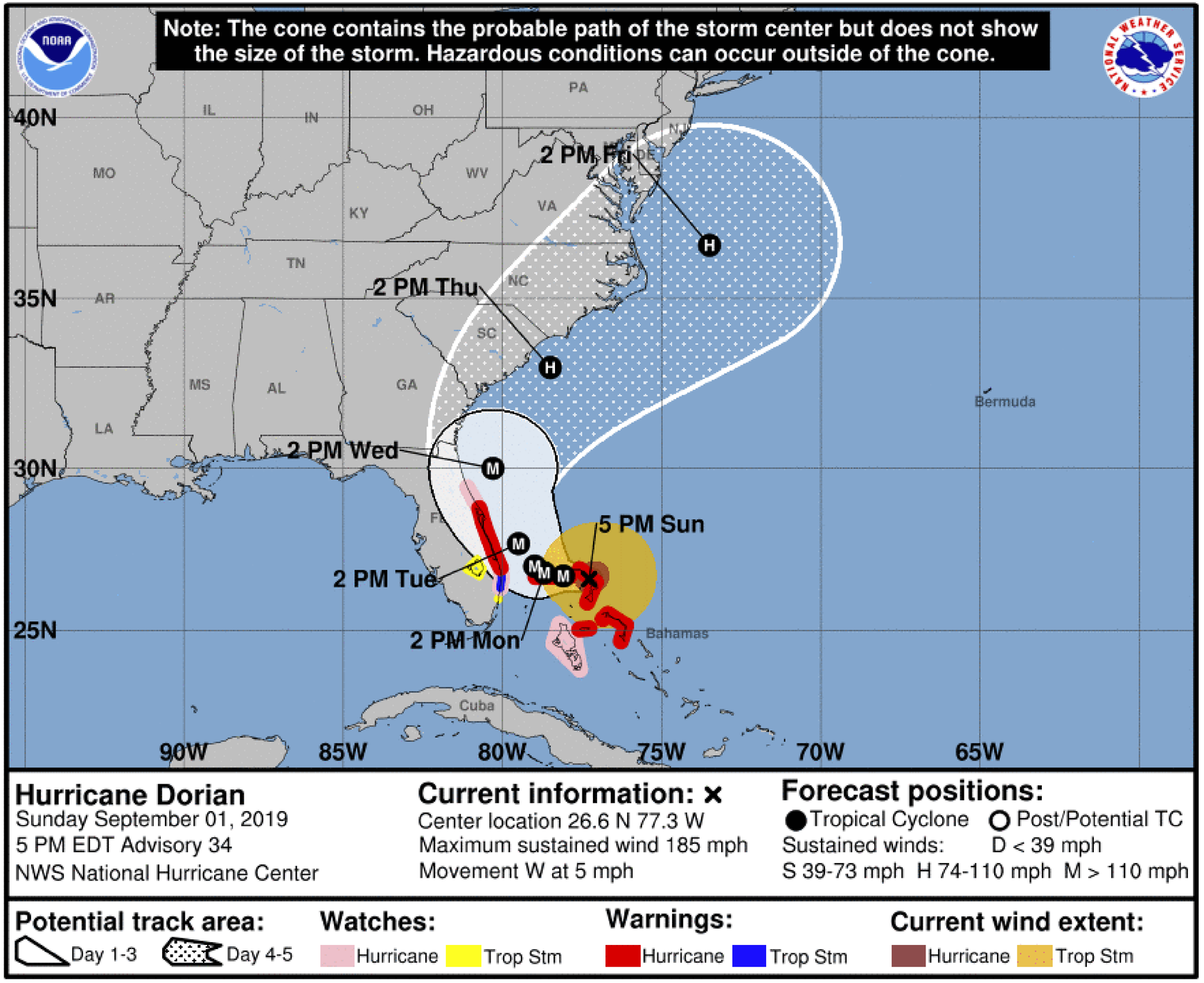
Kathryn Busemeyer - https://www.nytimes.com/interactive/2017/09/09/us/hurricane-irma-records.html

Now, on DS 4200…

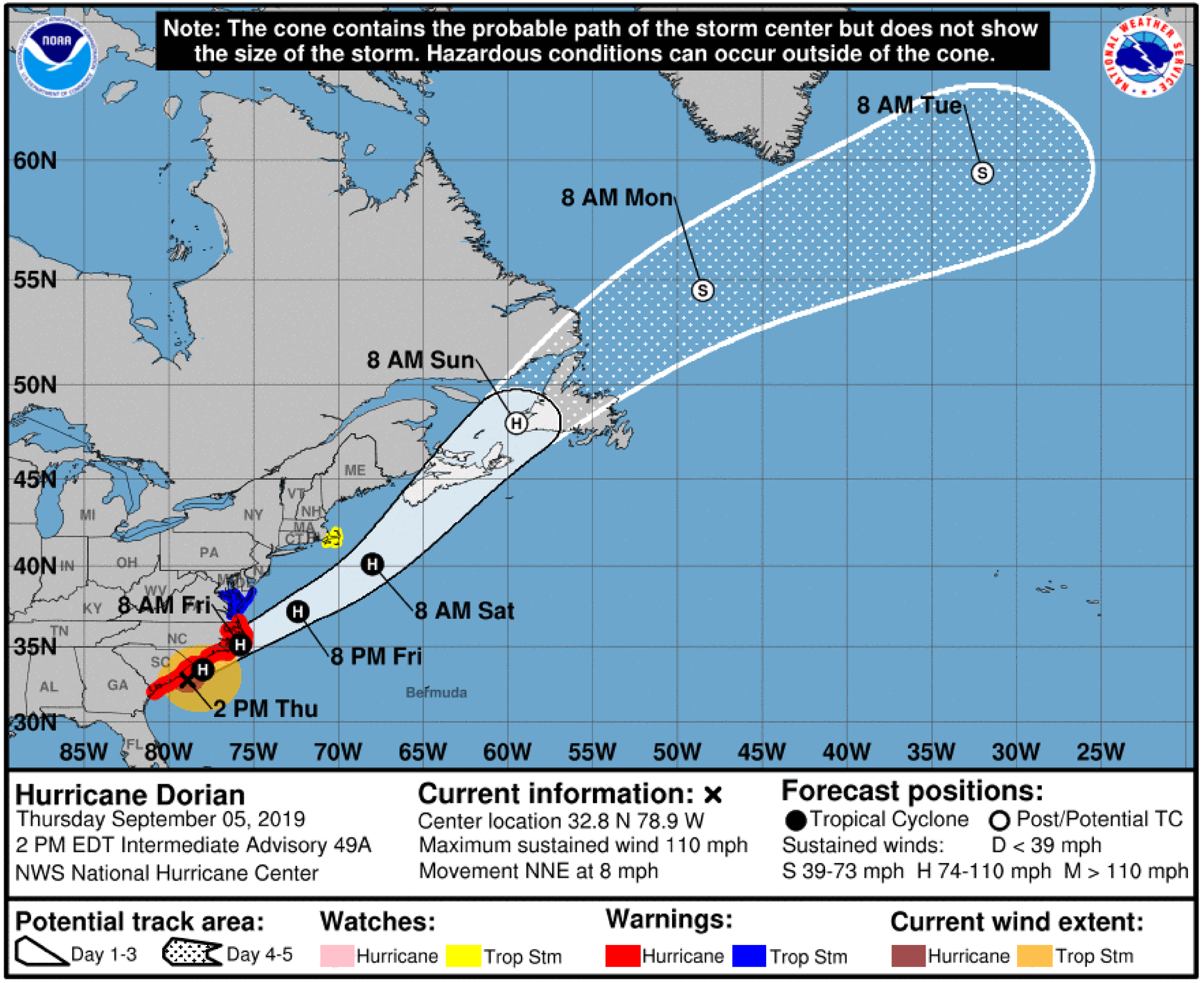
Hall of Fame or Hall of Shame

Prof. Krzystzof Gajos

Matthew Kolosick - https://twitter.com/blkahn/status/905141924939649024/photo/1

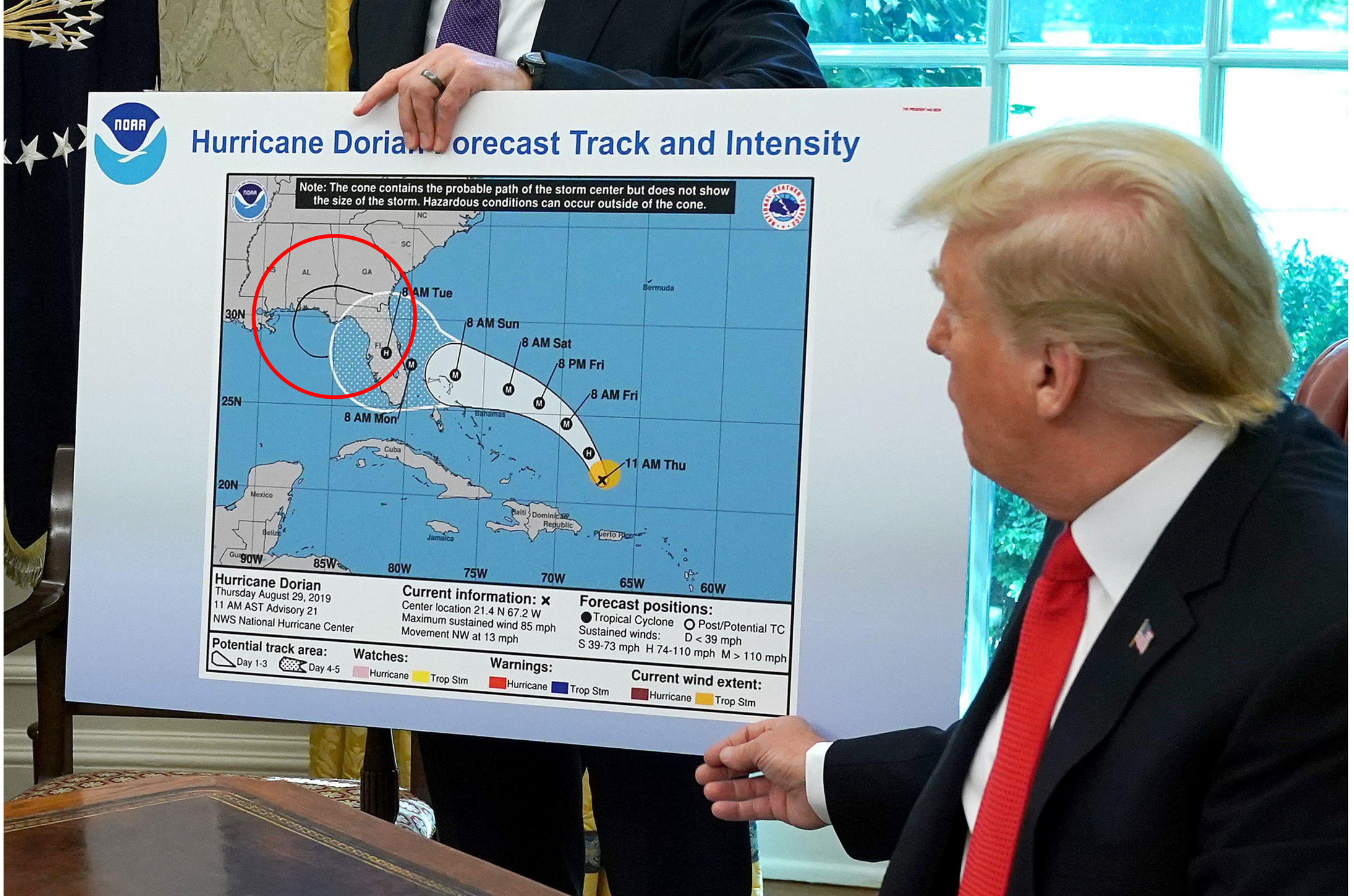


https://www.nhc.noaa.gov/refresh/graphics_at5+shtml/155815.shtml?cone#contents



https://www.nhc.noaa.gov/refresh/graphics_at5+shtml/155815.shtml?cone#contents

Hurricane Dorian Forecast Track and Intensity
Note: The cone contains the probable path of the storm center but does not show the size of the storm. Hazardous conditions can occur outside of the cone.
NOAA
8 AM Tue
8 AM Sun
8 AM Sat
8 PM Fri
8 AM Fri
11 AM Thu
Bermuda
Bahamas
Haiti
Dominican Republic
Puerto Rico
Jamaica
30N
75W
70W
65W
60W
Forecast positions:
Tropical Cyclone
Post/Potential TC
D < 39 mph


Hurricane Dorian Forecast Track and Intensity
Note: The cone contains the probable path of the storm center but does not show the size of the storm. Hazardous conditions can occur outside of the cone.
NC
SC
AL
GA
FL
Bermuda
Bahamas
Cuba
Haiti
Dominican Republic
Puerto Rico
Jamaica
Mexico
Belize
Guatemala
30N
25N
20N
90W
85W
80W
75W
70W
65W
60W
8 AM Tue
8 AM Sun
8 AM Sat
8 PM Fri
8 AM Fri
8 AM Mon
11 AM Thu
Hurricane Dorian
Thursday August 29, 2019
11 AM AST Advisory 21
NWS National Hurricane Center
Current information:
Center location 21.4 N 67.2 W
Maximum sustained wind 85 mph
Movement NW at 13 mph
Forecast positions:
Tropical Cyclone
Post/Potential TC
Sustained winds:
D < 39 mph
S 39-73 mph H 74-110 mph M > 110 mph
Potential track area:
Day 1-3
Day 4-5
Watches:
Hurricane
Trop Stm
Warnings:
Hurricane
Trop Stm
Current wind extent:
Hurricane
Trop Stm

Opinion

Those Hurricane Maps Don't Mean What You Think They Mean

We use hurricane forecasts to warn people. Why do we misinterpret them so often?

By Alberto Cairo

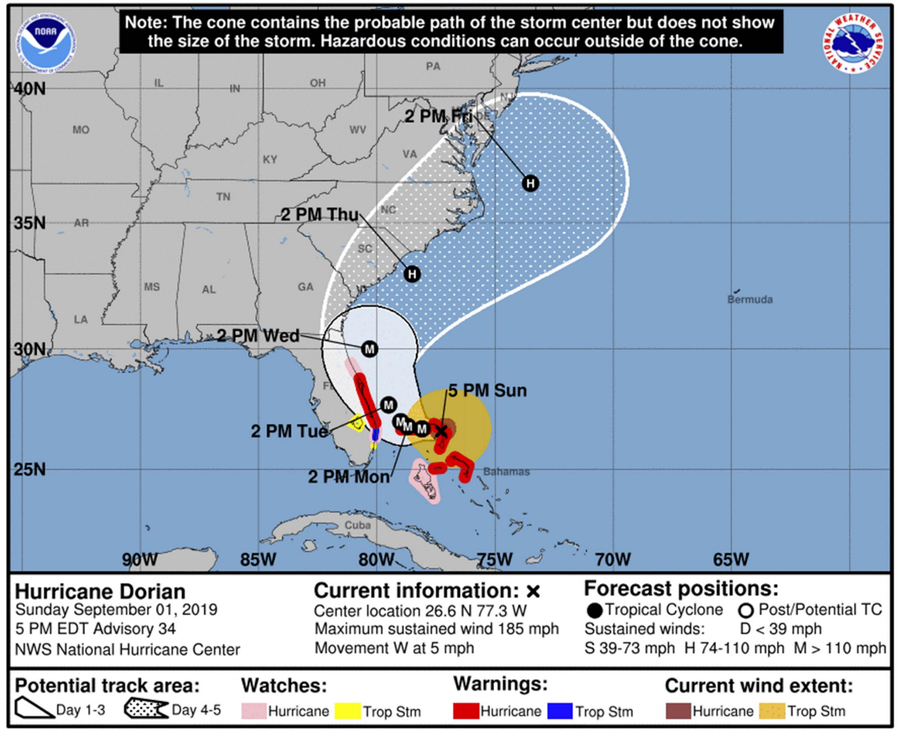
With Tala Schlossberg

https://www.nytimes.com/interactive/2019/08/29/opinion/hurricane-dorian-forecast-map.html

In-Class Redesign — Hurricane Funnels

35 min

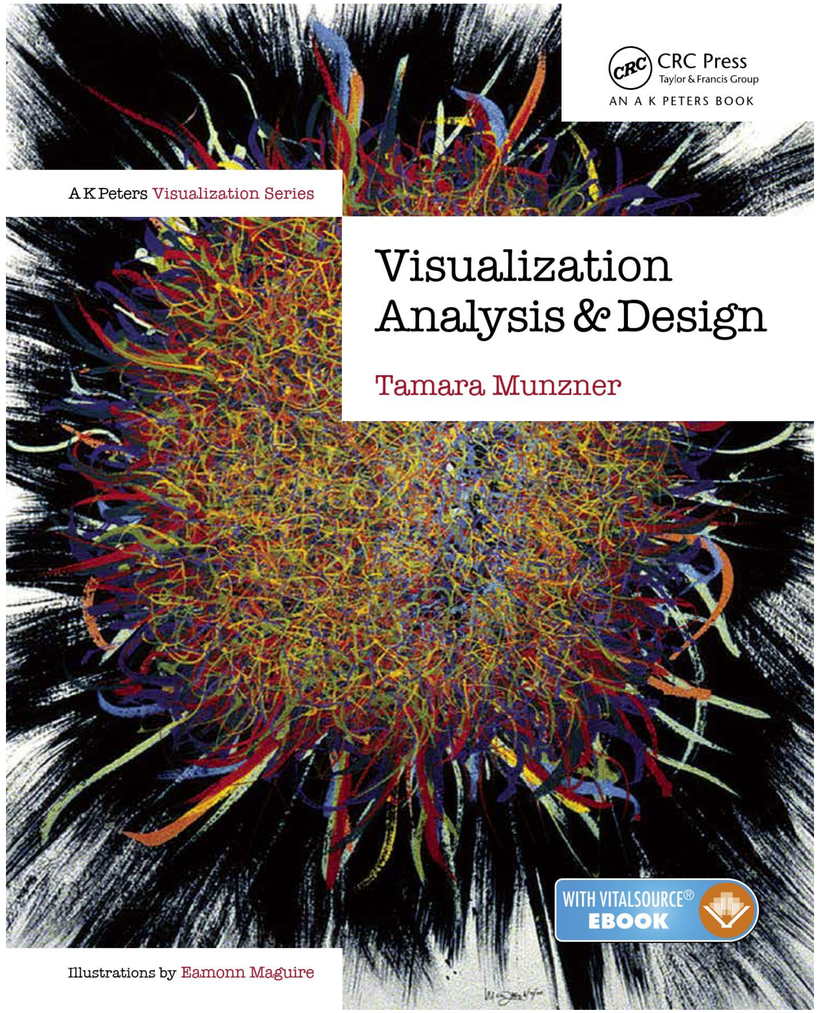
https://northeastern.instructure.com/courses/18721/assignments/573842



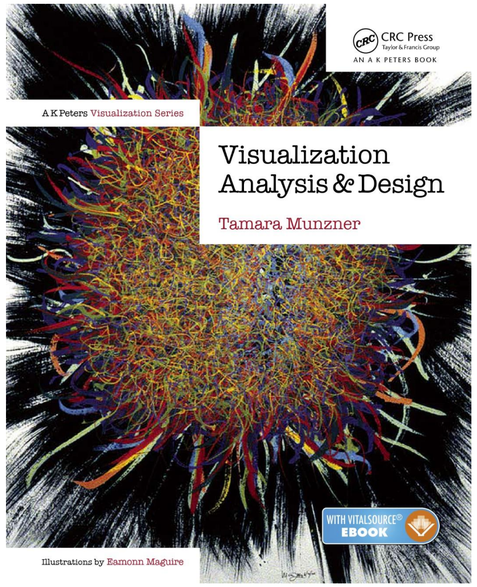
https://www.nhc.noaa.gov/refresh/graphics_at5+shtml/155815.shtml?cone#contents

The Nested Model for Visualization Development

TEXTBOOK



Additional "recommended" books as resources in syllabus



“Nested Model”

Domain situation
Observe target users using existing tools

Example

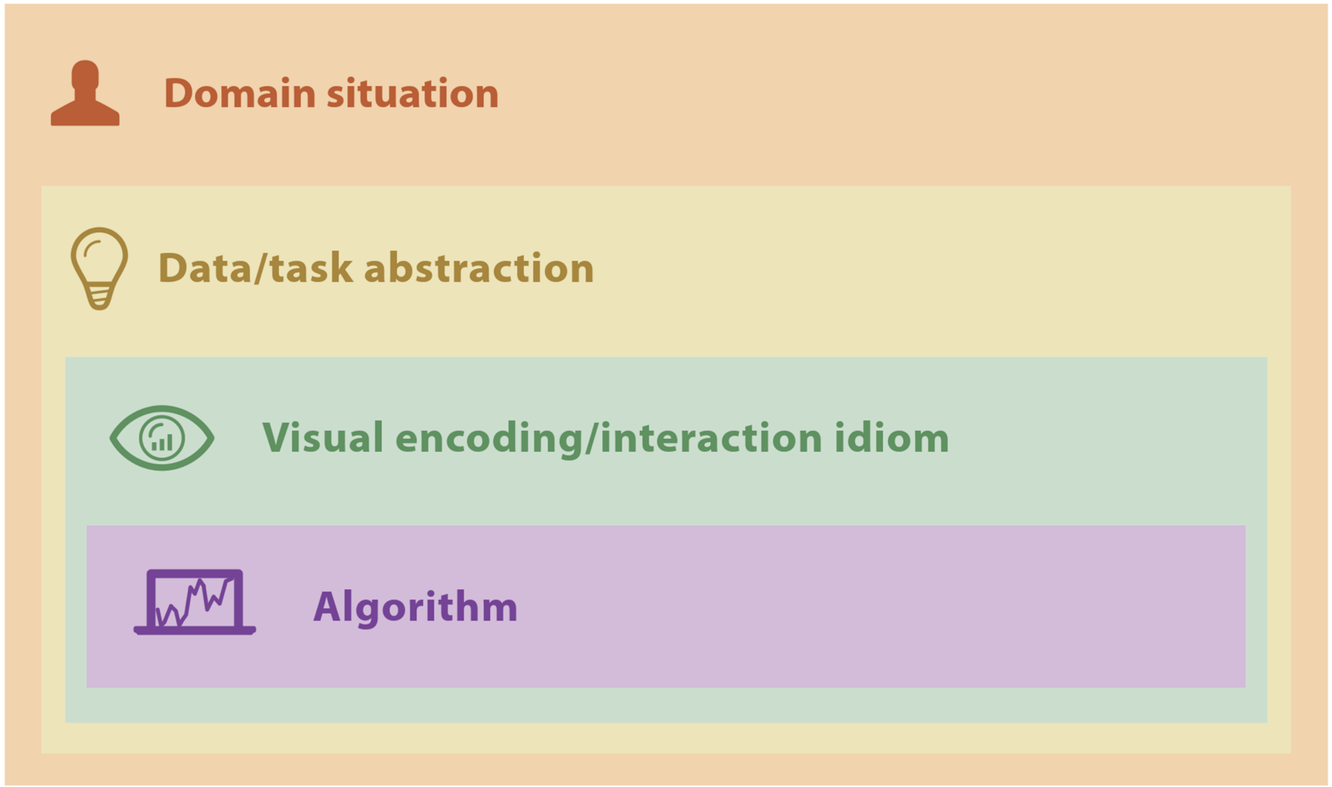
FAA (aviation)

What is the busiest time of day at Logan Airport?

Map vs. Scatter Plot vs. Bar

[Tamara Munzner]

Nested Model



Nested Model

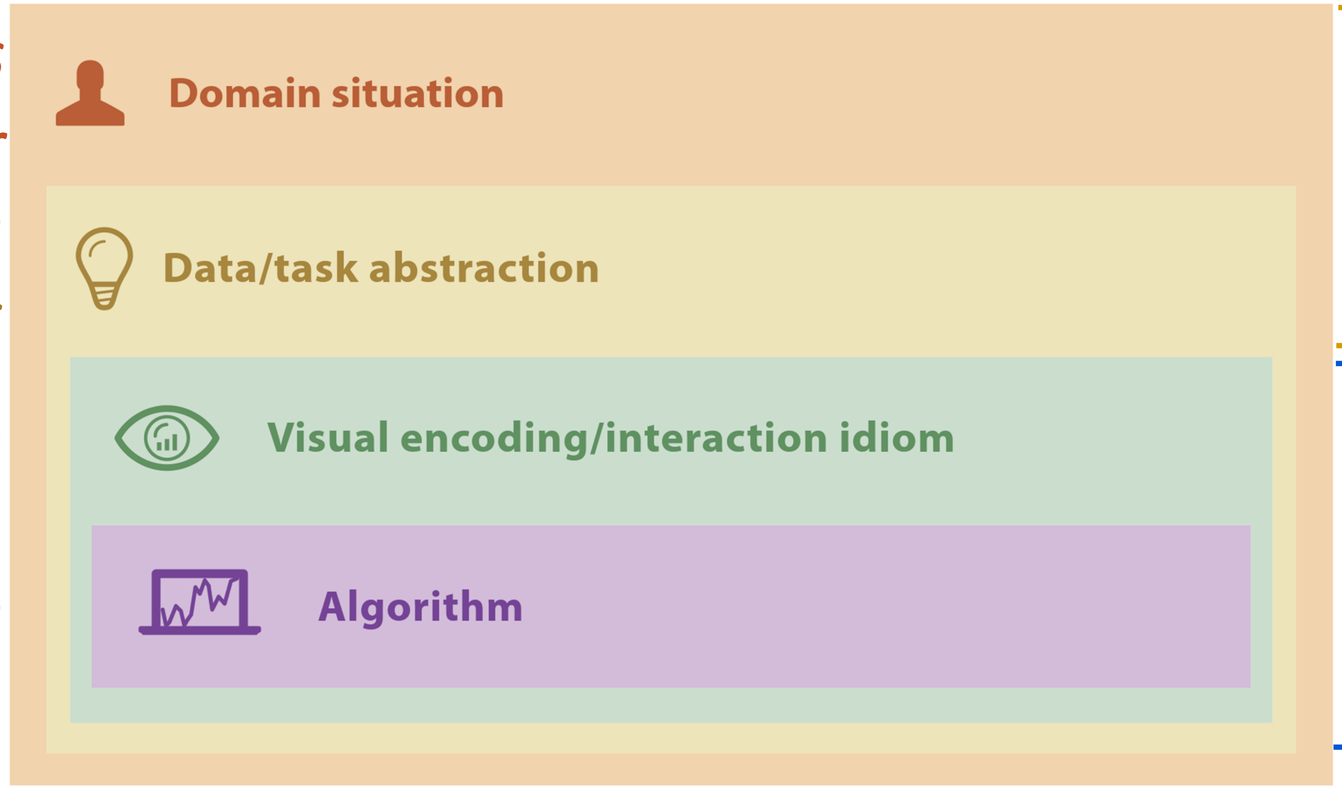
Human-centered design

Designer understands user

Abstract domain tasks

Visualization design

Implementation



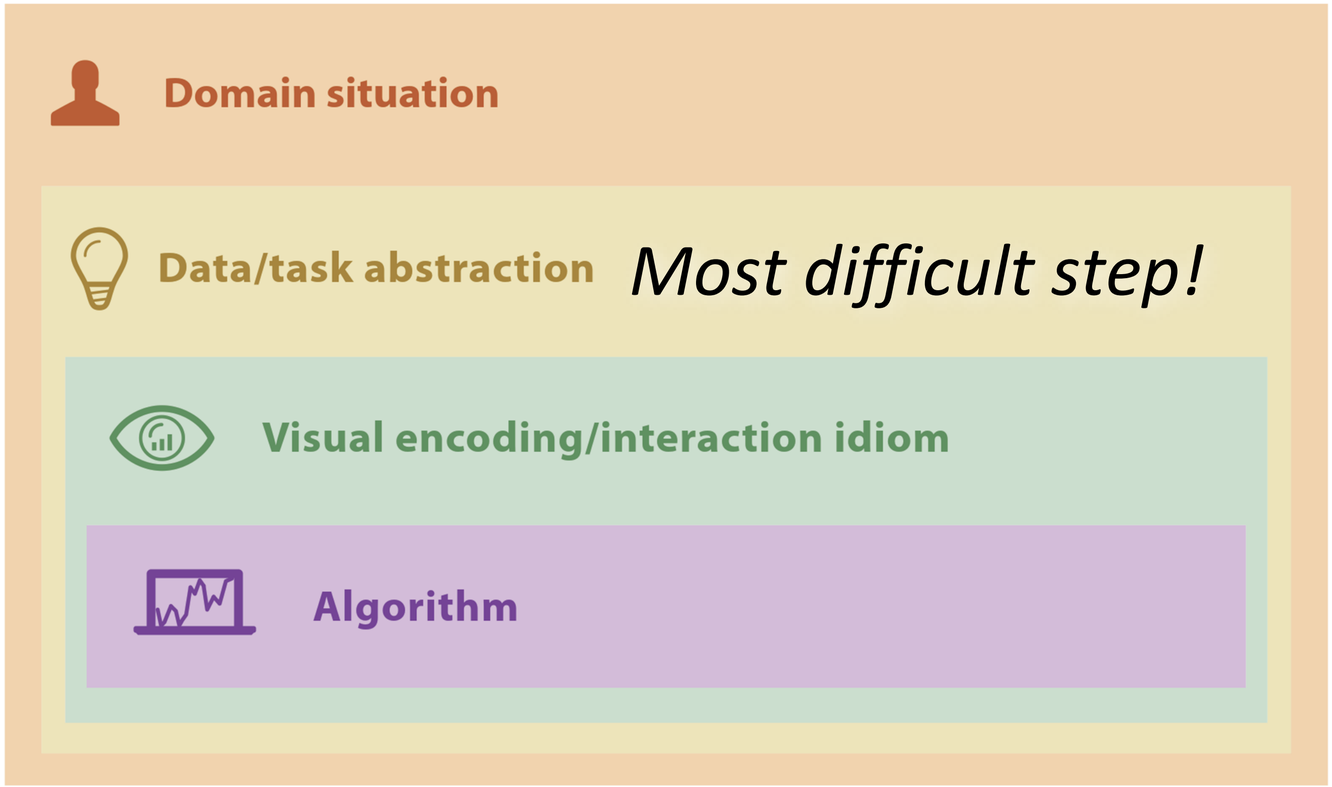
Identified

Designed

Nested Model

Design Study

TOP-DOWN
"problem-driven"

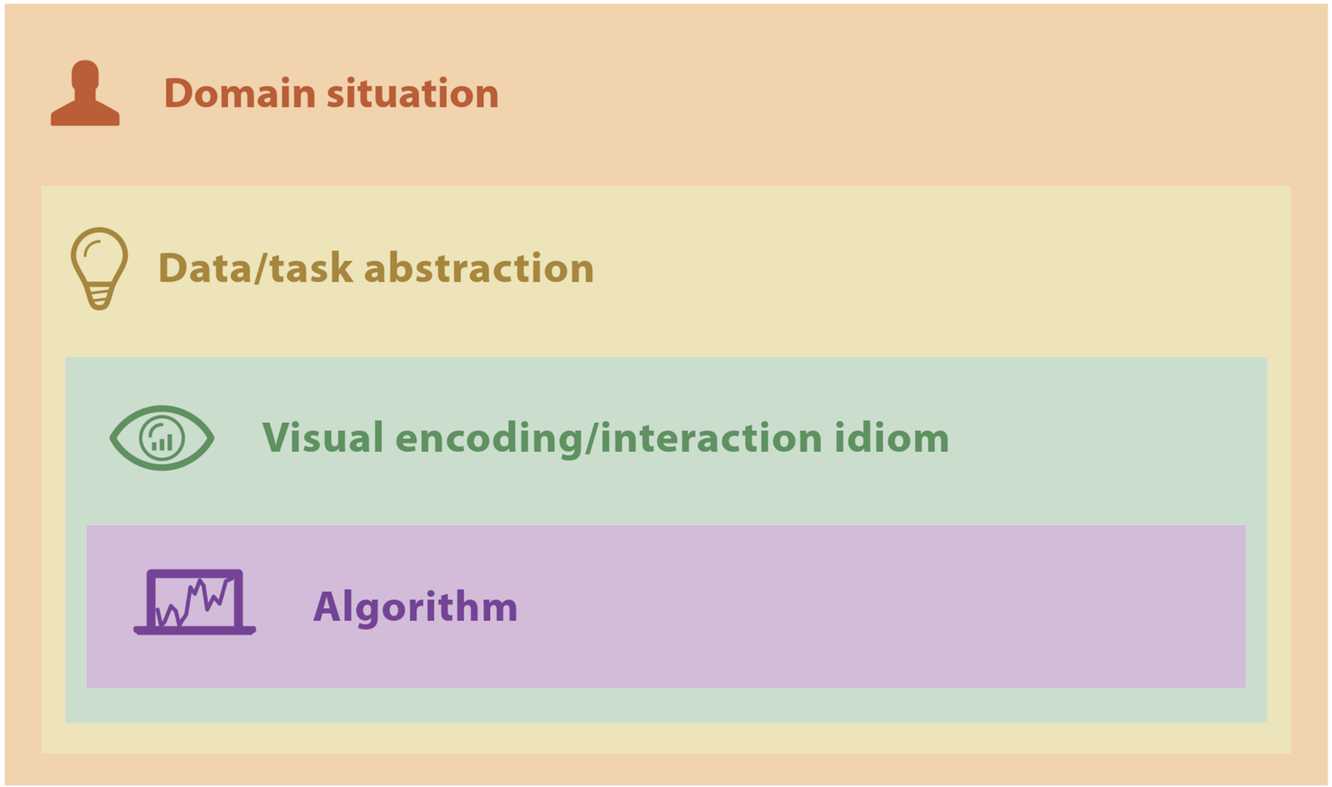


Technique

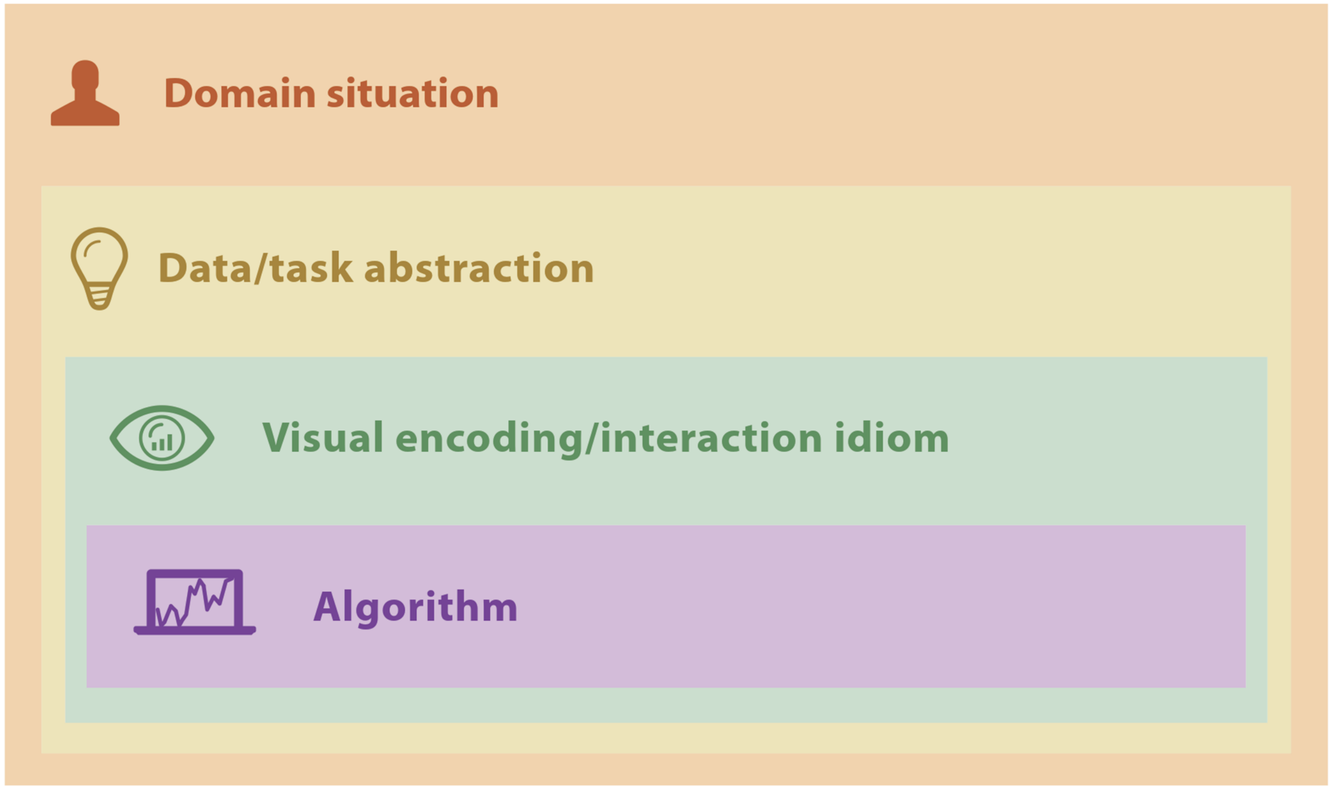
BOTTOM-UP
"technique-driven"

Nested Model

Mistakes propagate through model!



Threats to Validity



Threats to Validity

✓ *Final Project validation*

Domain situation

Data/task abstraction

Visual encoding/interaction idiom

Algorithm

Final project follow-up

Upcoming Assignments & Communication

https://c.dunne.dev/ds4200f20

Look at the upcoming assignments and deadlines (12:01am)!

- Textbook, Readings & Reading Quizzes
- Due W 2020-09-16: Assignment **1a,b,c**
- Due W 2020-09-23: Assignment **2a,b**
- Due W 2020-09-30: Project **1**

Everyday Required Supplies:

- 5+ colors of pen/pencil
- White paper
- Laptop and charger

Use Canvas Discussions for general questions, email the instructor & TAs for questions specific to you.