

**CSCI 144**  
**Introduction to Computer  
 Science: Multimedia**

Dr. Michael Goldwasser  
 Saint Louis University

Slides originally courtesy of Greenberg, Xu, Kumar

## Administrivia

### CSCI 144: Spring 2015

### Intro to Computer Science: Multimedia

**Course Website:** [cs.slu.edu/~goldwasser/144](http://cs.slu.edu/~goldwasser/144)

**Instructor:**

Dr. Michael Goldwasser ([goldwamh@slu.edu](mailto:goldwamh@slu.edu))

**Grading**

• 7 Projects	49%
• 6 Homeworks	18%
• Exam 1	13%
• Exam 2	20%
Total	100%

**Lectures**

TuTh 11:00a to 12:15p in Ritter Hall 316

**TA-Support**

>10 hrs/week in Ritter Hall 121

**Office Hours**

See Syllabus. Walk-ins are welcome!<sup>GJK2013</sup>

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## Administrivia

### Software

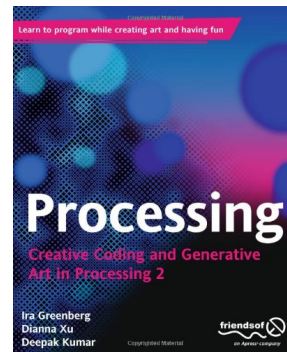
#### Processing 2.X

- Already installed our Lab
- Also available for your own computer @ [www.processing.org](http://www.processing.org)



### Book

**Creative Coding & Generative Art in Processing 2**  
by Ira Greenberg, Dianna Xu, Deepak Kumar,  
friendsofEd/APress, 2013. Available at the  
Campus Bookstore or amazon.com or other  
vendors.



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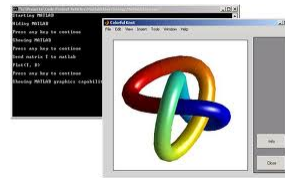
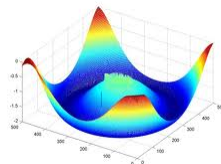
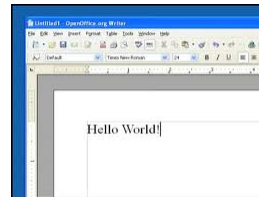
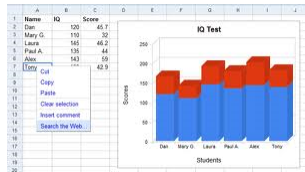
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## What is Computing?

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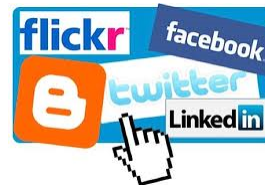
# Computing: Your Parent's View



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# Computing: internet, e-mail, network...



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## Computing: Entertainment...

iPhone home screen showing various app icons.

YouTube logo.

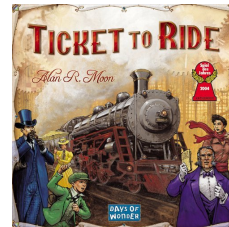
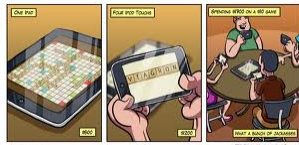
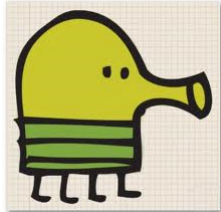
Silhouette of a person dancing with a smartphone.

Hulu logo and a grid of movie posters.

Netflix logo.

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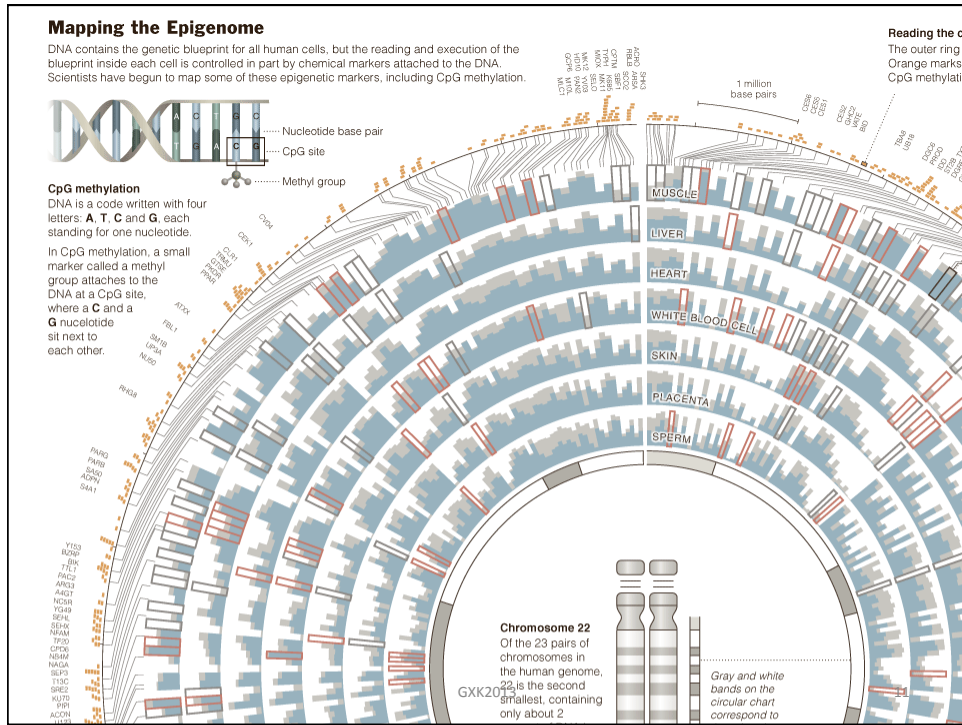
## Computing: Entertainment...



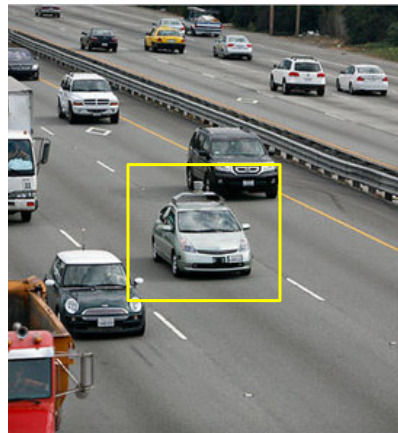
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## Cutting Edge Computer Science



## Google's Autonomous Car



- Nevada made it legal for autonomous cars to drive on roads in June 2011
- California introduced a similar bill in Aug 2012

## 2011 Jeopardy!



- In February 2011, IBM Watson bested Brad Rutter (biggest all-time money winner) and Ken Jennings (longest winning streak)
- IBM is currently applying Watson's technology to medical diagnosis and legal research

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# ART



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Protobytes  
By Ira Greëhberg

## Areas in Computer Science



Artificial  
Intelligence



Robotics



Human-Computer  
Interaction



Computer  
Graphics



Computer  
Vision



Operating  
Systems



Computer  
Networking



Databases



Computer  
Security



Ubiquitous  
Computing

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## What is Computer Science?

Computer science is the study of solving problems using computation

- Computers are part of it, but the emphasis is on the problem solving aspect



Computer scientists work across disciplines:

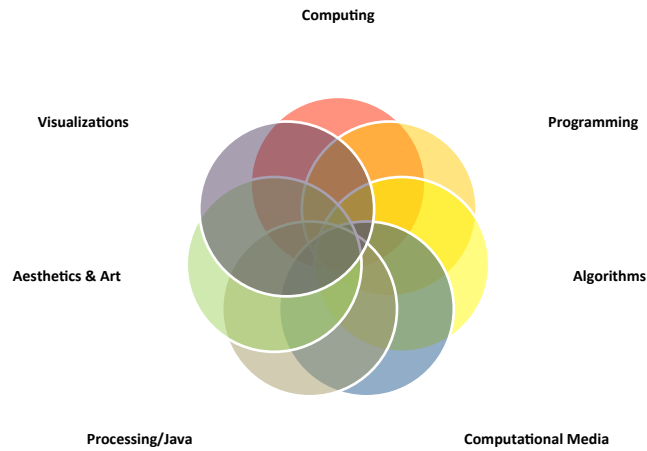
Mathematics	Geoscience	Medicine/Surgery
Biology (bioinformatics)	Archeology	Engineering
Chemistry	Psychology	Linguistics
Physics	Sociology	Art
Geology	Cognitive Science	...

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# Introduction to <sup>Creative</sup> Computing



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## Algorithms

An **algorithm** is an effective method for solving a problem expressed as a finite sequence of instructions. For example,

### Put on shoes

left sock  
right sock  
left shoe  
right shoe



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## Programming = Writing Apps

**Programming** is the process of designing, writing, testing, debugging / troubleshooting, and maintaining the source code of computer programs. This source code is written in a programming language.

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## A program

```
int areaOfCircle(int radius){  
    return PI*radius*radius;  
}  
  
r = 10;  
area = areaOfCircle(r);
```

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## Programming Languages

Processing	Python	Lisp
<pre>int areaOfCircle(int radius) {   return PI*radius*radius; }  r = 10; area = areaOfCircle(r);</pre>	<pre>def areaOfCircle(radius):   return PI*radius*radius;  r = 10 area = areaOfCircle(r)</pre>	<pre>(defun areaOfCircle (radius)   (return (* PI radius radius)))  (setq r 10) (setq area (areaOfCircle r))</pre>

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## A more interesting program...

```
Eye e1, e2, e3, e4, e5;

void setup()
{
  size(200, 200);
  smooth();
  noStroke();
  e1 = new Eye( 50, 16, 80);
  e2 = new Eye( 64, 85, 40);
  e3 = new Eye( 90, 200, 120);
  e4 = new Eye(150, 44, 40);
  e5 = new Eye(175, 120, 80);
} // setup()

void draw()
{
  background(102);

  e1.update(mouseX, mouseY);
  e2.update(mouseX, mouseY);
  e3.update(mouseX, mouseY);
  e4.update(mouseX, mouseY);
  e5.update(mouseX, mouseY);

  e1.display();
  e2.display();
  e3.display();
  e4.display();
  e5.display();
} // draw()
```

```
class Eye
{
  int ex, ey;
  int size;
  float angle = 0.0;

  Eye(int x, int y, int s) {
    ex = x;
    ey = y;
    size = s;
  } // Eye()

  void update(int mx, int my) {
    angle = atan2(my-ey, mx-ex);
  } // update()

  void display() {
    pushMatrix();
    translate(ex, ey);
    fill(255);
    ellipse(0, 0, size, size);
    rotate(angle);
    fill(153);
    ellipse(size/4, 0, size/2, size/2);
    popMatrix();
  } // display()
} // class Eye
```

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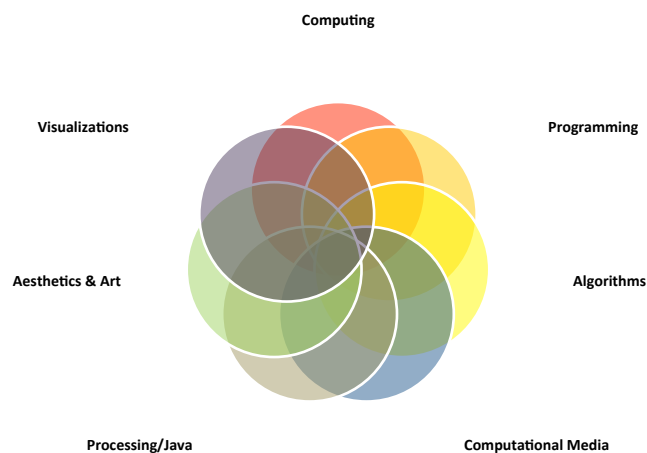
## Our Goal

- Use computing to realize works of art
- Explore new metaphors from computing: images, animation, interactivity, visualizations
- Learn the basics of computing
- Have fun doing all of the above!

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## Introduction to <sup>Creative</sup> Computing



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# Examples

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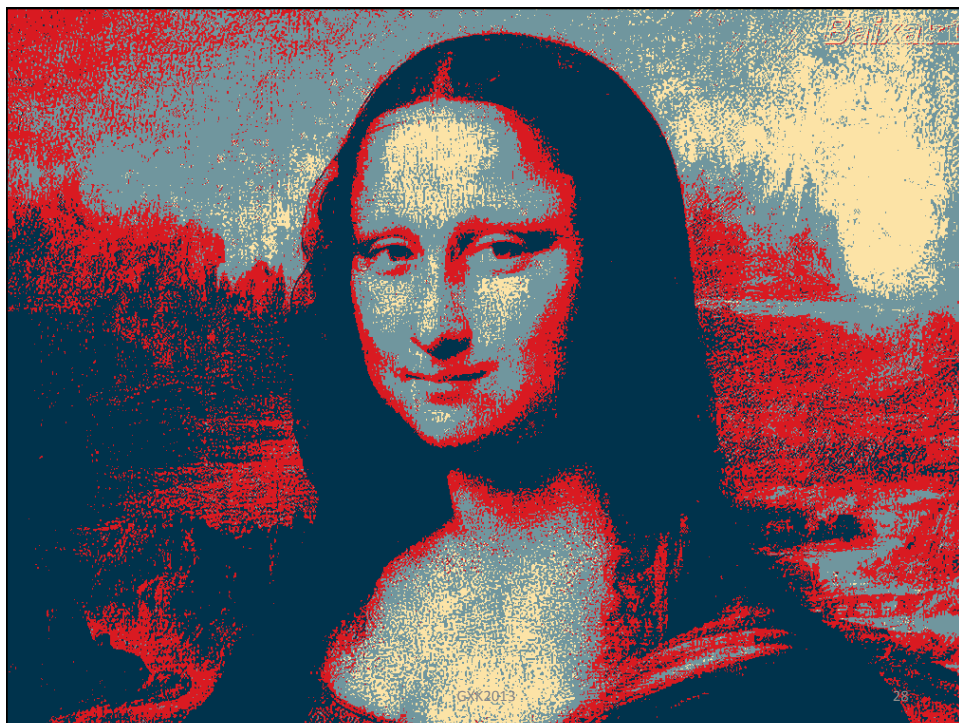
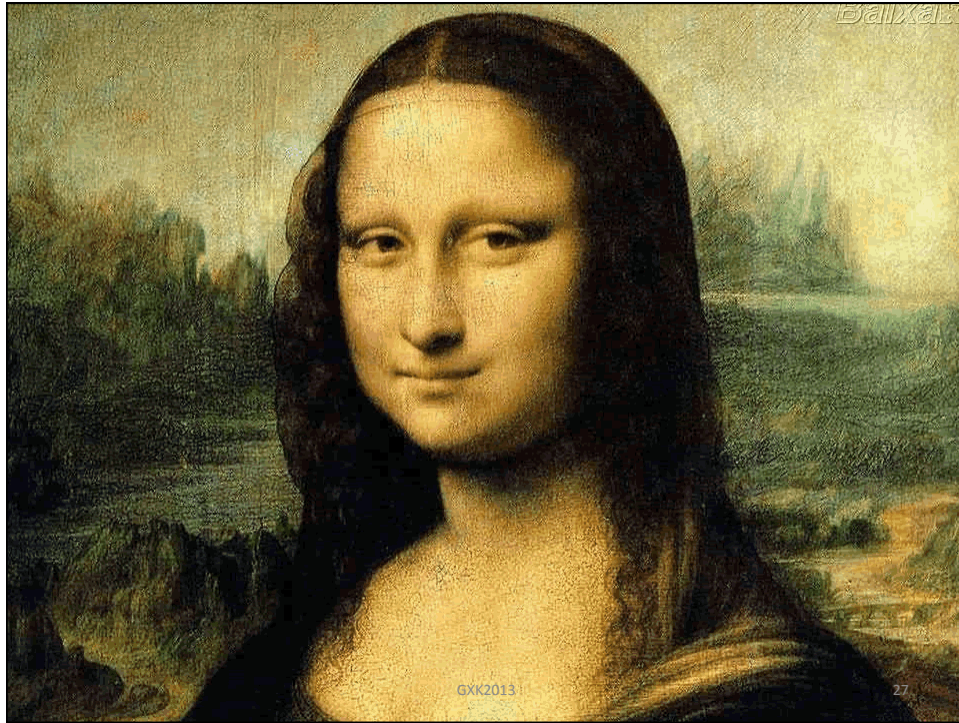
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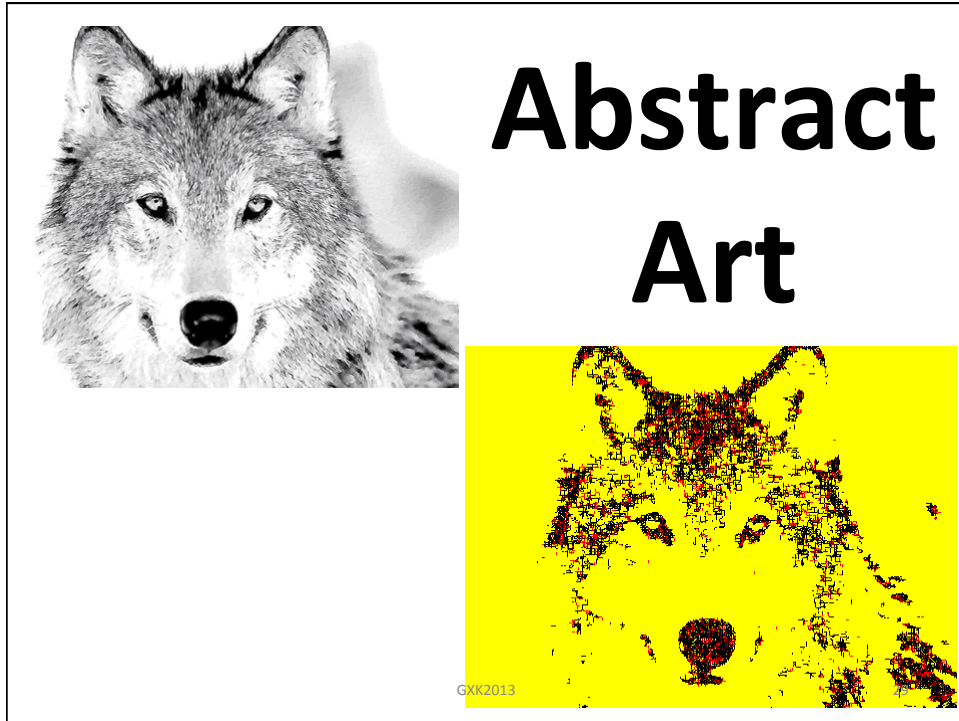
# Shepard Fairey



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## Summertime

Summertime,  
And the livin' is easy  
Fish are jumpin'  
And the cotton is high

Your daddy's rich  
And your mamma's good lookin'  
So hush little baby  
Don't you cry

One of these mornings  
You're going to rise up singing  
Then you'll spread your wings  
And you'll take to the sky

But till that morning  
There's a'nothing can harm you  
With daddy and mamma standing by

Summertime,  
And the livin' is easy  
Fish are jumpin'  
And the cotton is high

Your daddy's rich  
And your mamma's good lookin'  
So hush little baby  
Don't you cry

Word Cloud

Created using: wordle.net

Lyrics by George Gershwin    GKK2013    30

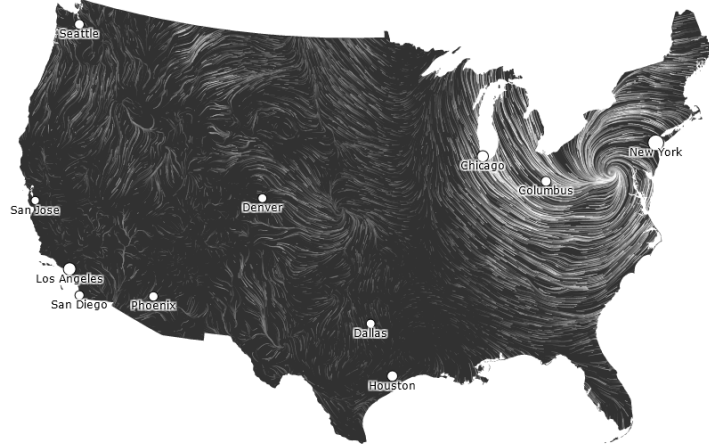
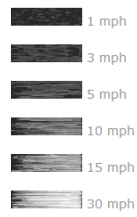




# Map-based

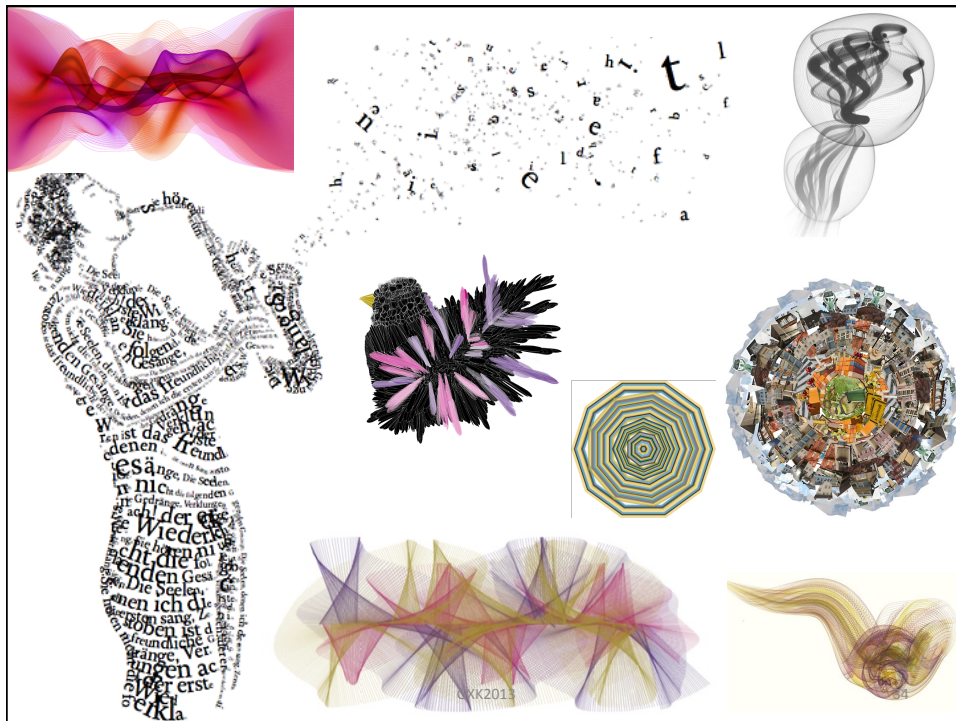
October 30, 2012  
6:59 am EST  
(time of forecast download)

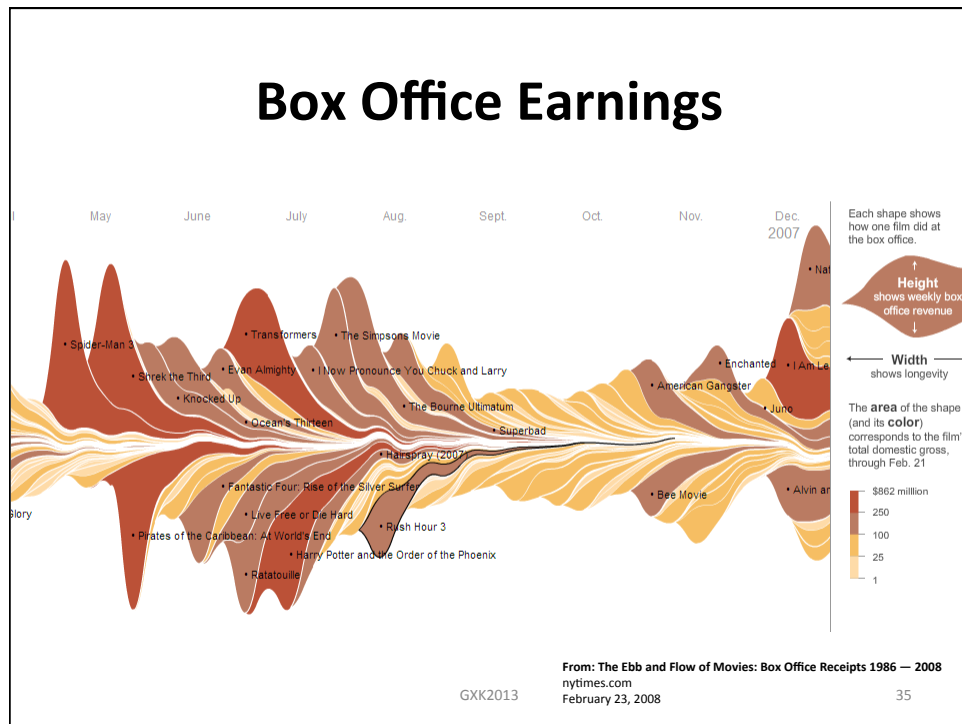
top speed: 39.7 mph  
average: 8.4 mph



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