Computational Thinking:
Visual Media

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CS 151

Lecture 1
Spring 2021
My academic journey

Skidmore '09

Ph.D. Cognitive and Neural Systems '13

Postdoc 2013-2018

Assistant Professor Computer Science 2018
Meet Otto Layton
Born September 2, 2018

Two years ago... Now
Layton Child #2

Coming…

~Late April, 2021!
I do research in computational neuroscience

How does the brain process information?

If we understand how the brain works, can we simulate it on a computer?

What shows up on your eye

Can we develop smarter technology based on the brain?

What shows up in your brain
My research: How do humans perceive their self-motion and object motion?
Where the drone ‘thinks’ it’s going
What can you do with computer science?

Short answer: A lot!
It is integral to most industries in today’s world
Virtual and augmented reality

Add virtual objects

To the real world
Instagram-like filters
(You will design your own in this class!)
Animation
TV (and Zoom) green screens
(You will do this in this class!)
Game design

FORTNITE
Apps and software development
Robotics
Finding images that look similar to one that you search for

https://microsoft.github.io/art/app
Computer hardware, engineering, mobile electronics
Interdisciplinary computation

- Computational biology and neuroscience.
- Art (this class!)
- Mapping
- Social networks
Other areas

- Databases
- Web design and development
- Programming languages and operating systems
- Data visualization
- Cyber security
- Human-Computer interaction, wearable technology
- …many more!
Announcements

• Lab starts tomorrow! Please be there! *Zoom link posted on Google Classroom.*

• We will be coding tomorrow! Everyone needs to have Zoom, Python, and VS Code installed **before** lab!

• Our CS151 website will be your go-to resource for everything (syllabus, office hours, projects, lab, TAs, etc). Bookmark it!
How do we get computers to do stuff for us?

• Through a list of instructions (commands) collectively called code.

• Today we’re going to write our first computer program together. A program is a list of commands that when performed gets the computer to solve a problem for us.
Computers are not so good at understanding English (or any language humans speak)!
Computers are VERY literal
The order of commands in computer code matters a lot!
Code *structure* is rigid, but writing code is *creative*!

- There are many ways to get computers to solve the smallest problems.
- Just like cooking expresses your unique ideas, code expresses your creativity thought.
Swift playgrounds