

Computational Thinking: Visual Media

Oliver W. Layton

CS 151

Lecture 1
Spring 2021

My academic journey

SKIDMORE
COLLEGE

Skidmore '09

**BOSTON
UNIVERSITY**

**Ph.D. Cognitive and
Neural Systems '13**



Rensselaer

**Postdoc
2013-2018**

Colby

**Assistant Professor
Computer Science
2018**

Meet Otto Layton

Born September 2, 2018

Two years ago...



Now



Layton Child #2

Coming...

~Late April, 2021!

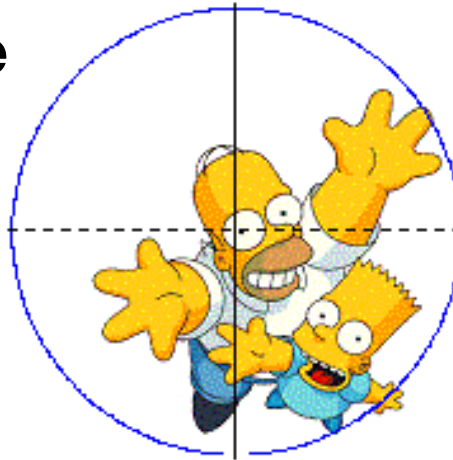
I do research in computational neuroscience

How does the brain process information?

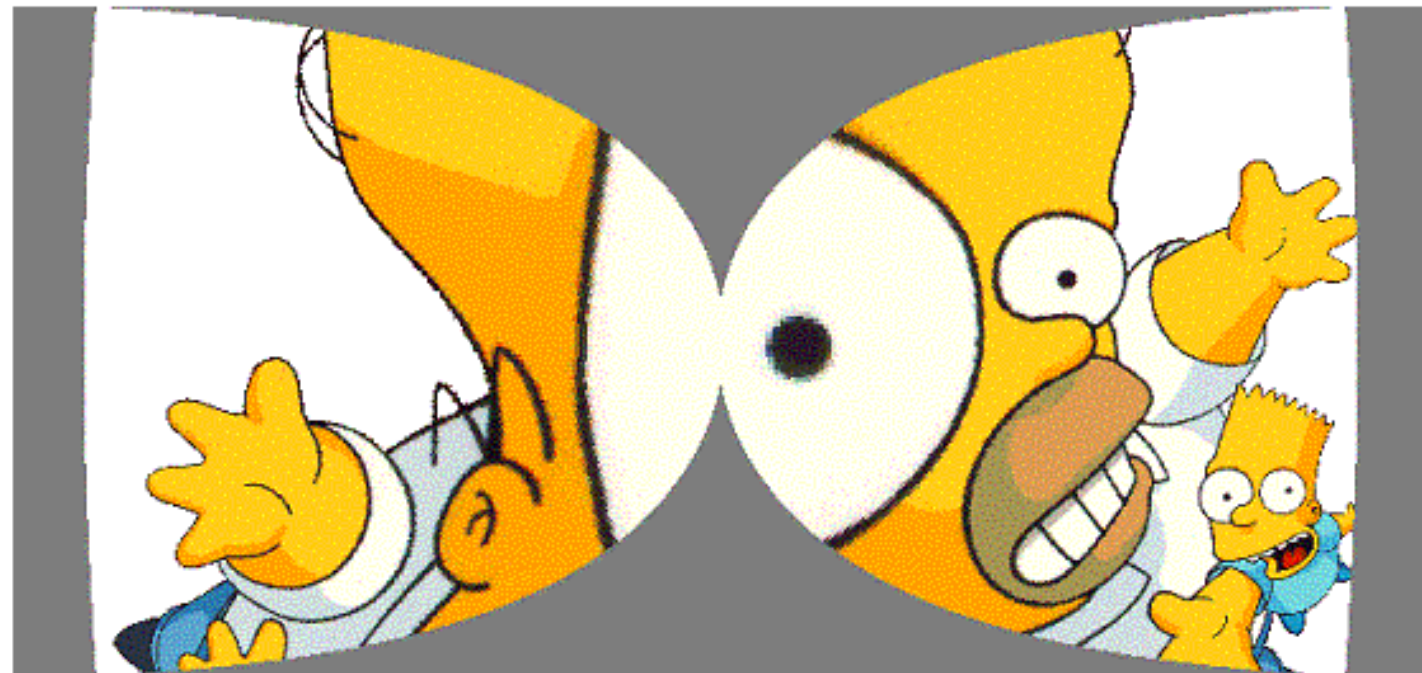
Can we develop smarter technology
based on the brain?

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

What shows up on your eye



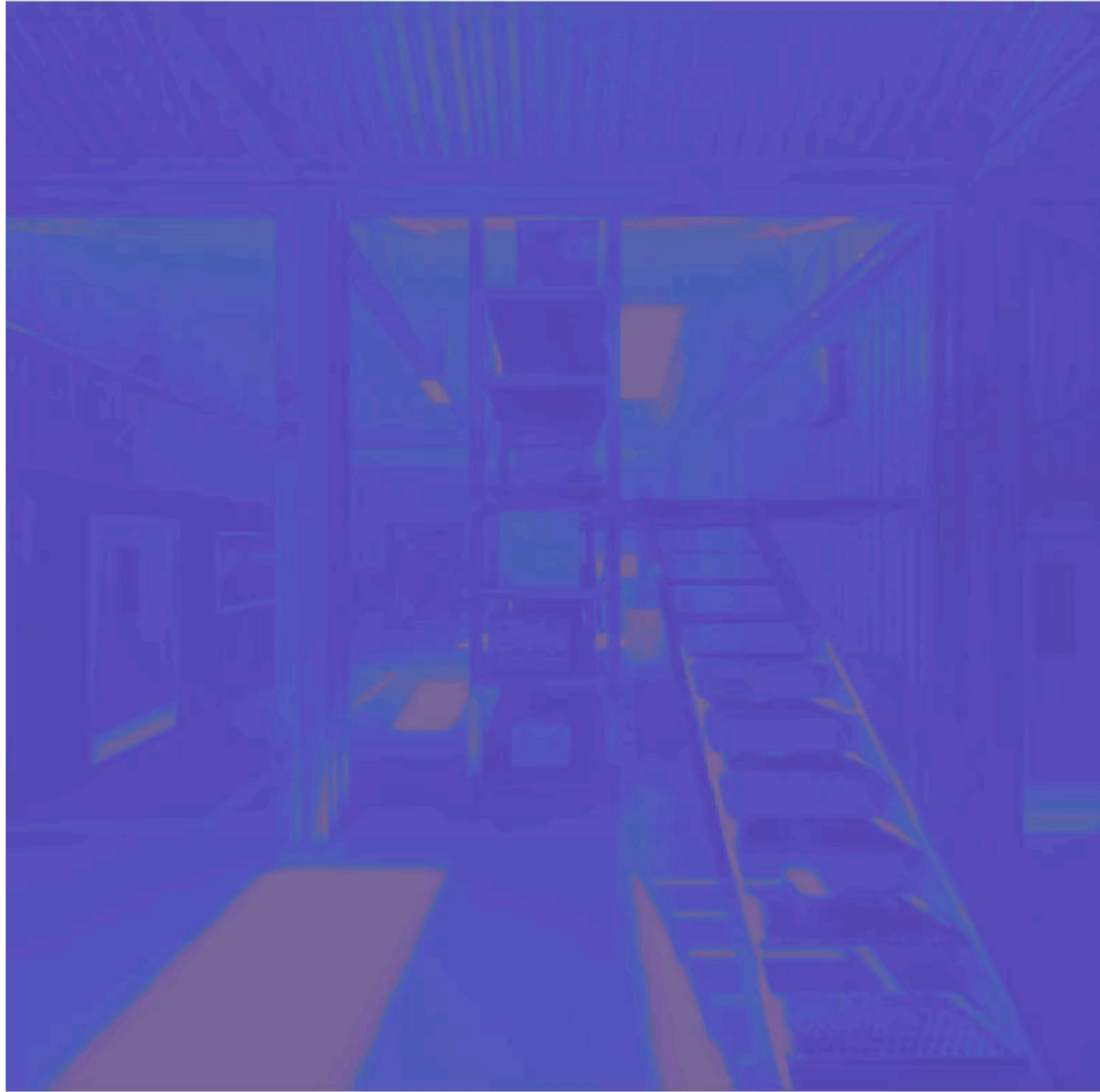
What shows up in your brain



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

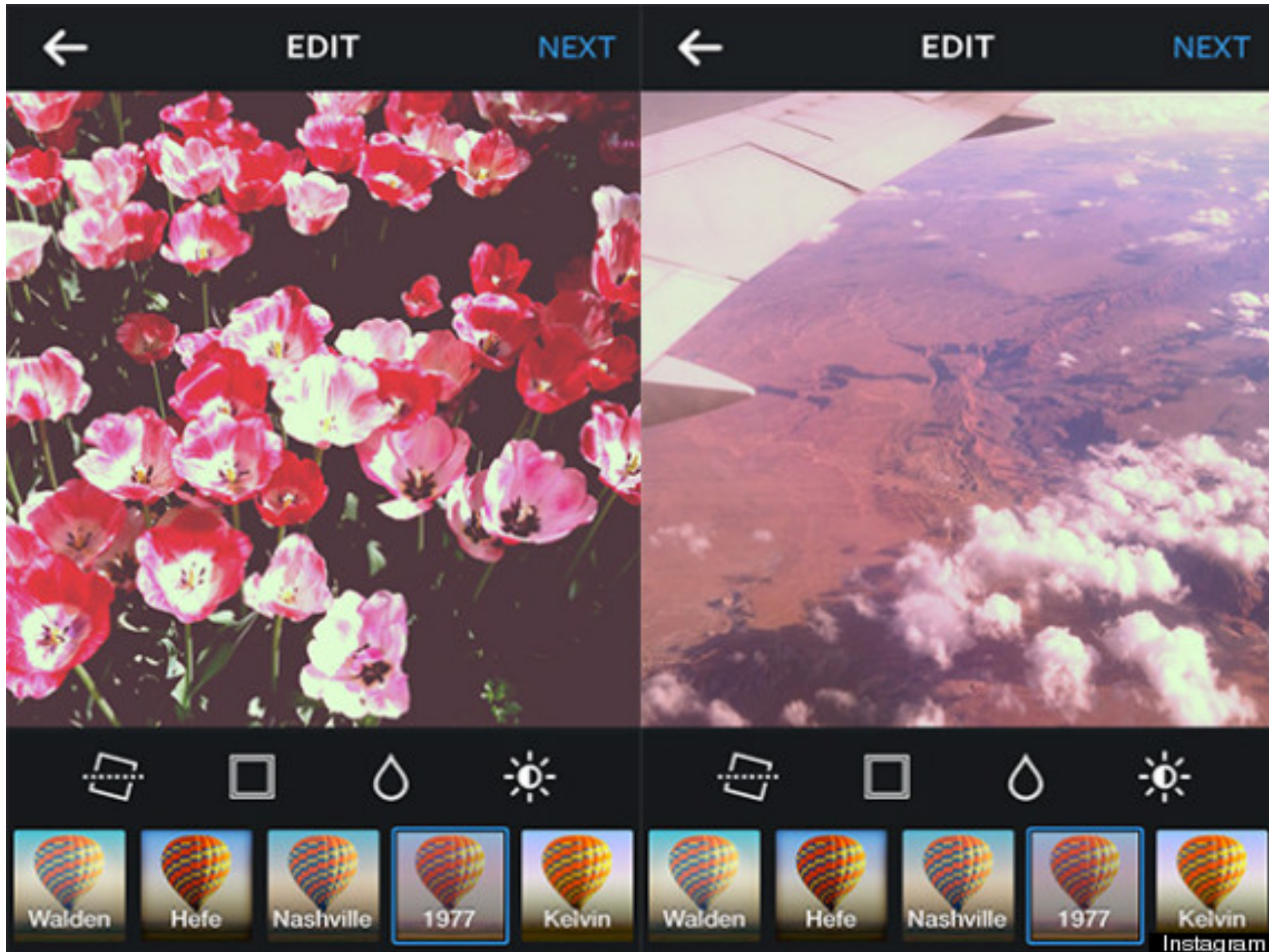


To the real world



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

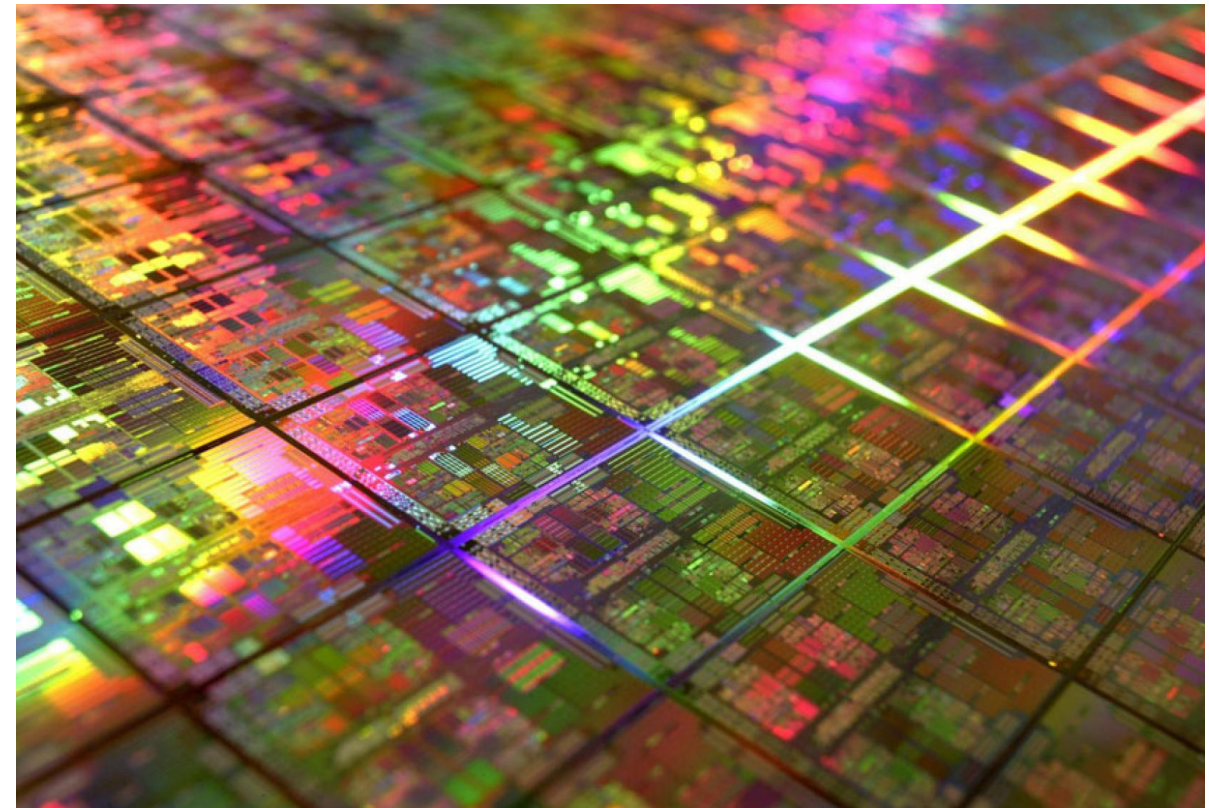


Machine Learning / Artificial Intelligence

**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?

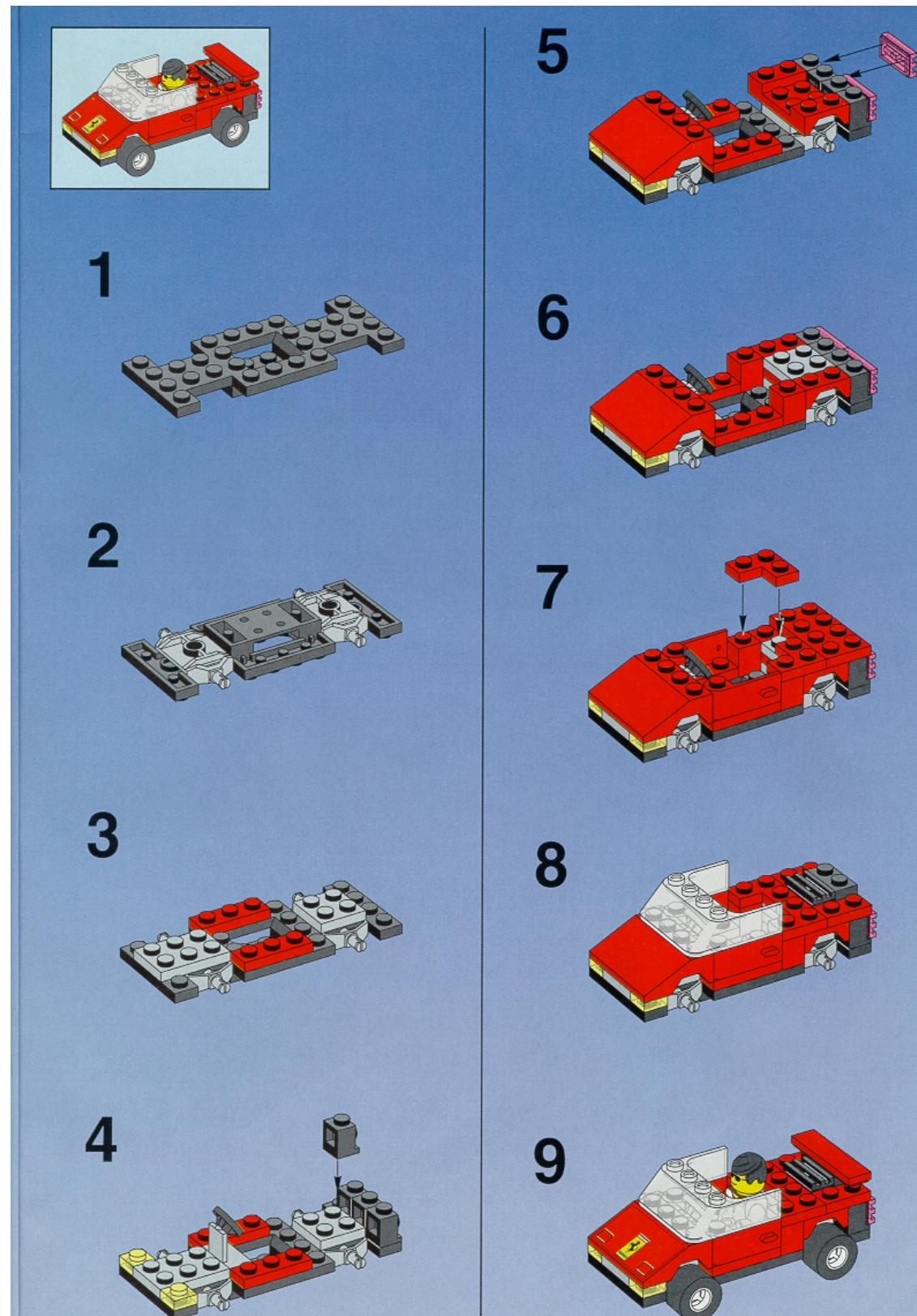


- Through a list of instructions (**commands**) collectively called **code**.
- Today we're going to write our first computer program together. A **program** is a list of commands that when performed gets the computer to solve a problem for us.

Computers are not so good at understanding English (or any language humans speak)!



Computers are **VERY** literal

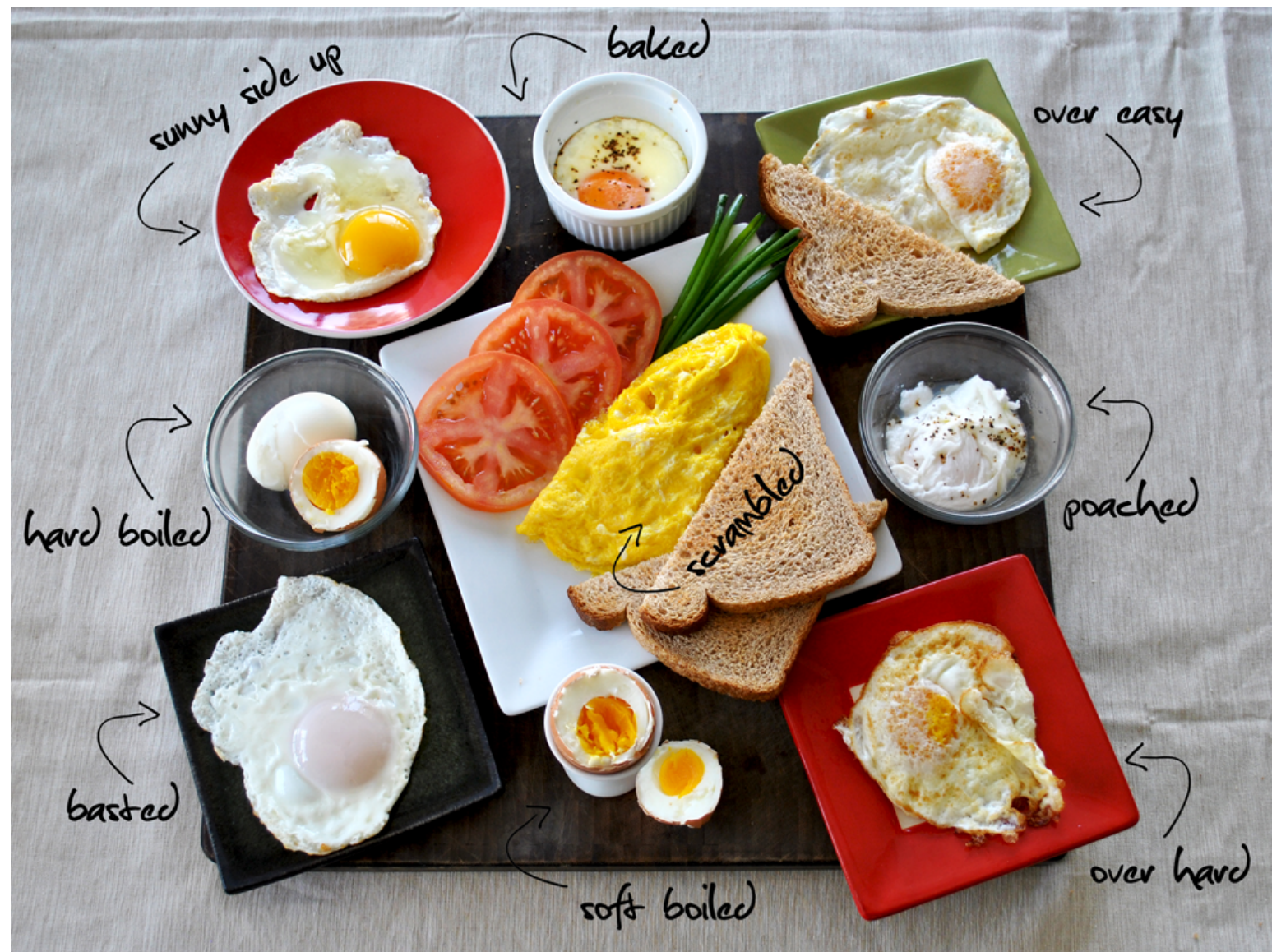


**The order of commands in
computer code matters a lot!**



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