Secret Lives of Modern Algorithms Movie

Cards to Accompany Movie

https://www.youtube.com/watch?v=kiFfp-HAu64

Presenter: Marcus Du Sautoy

Algorithm

A series of steps to complete a task.
Ideally, an algorithm will always end.

Examples: YouTube Instructions to make a paper airplane, A Computer Program, A Flow Chart.

Algorithms are important because they are used to control a large part of our modern life. Efficiency and accuracy are important because we want the world to be run well.

Trade off

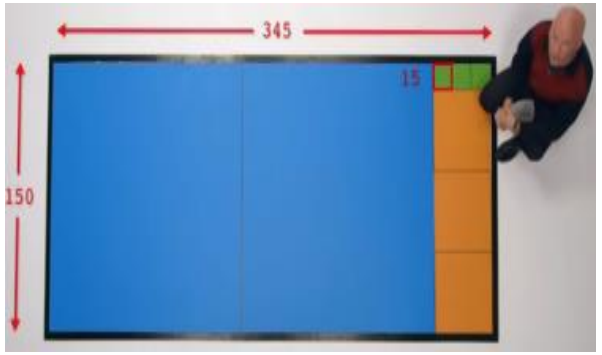
A compromise.
You must give up something to get something else.

Eg. You get to eat something yummy (doughnut), but it isn't healthy OR You eat something healthy (lettuce), but it isn't yummy.

Why is this important? All of our algorithms have a trade off. There is no one ideal algorithm that works in all cases equally.

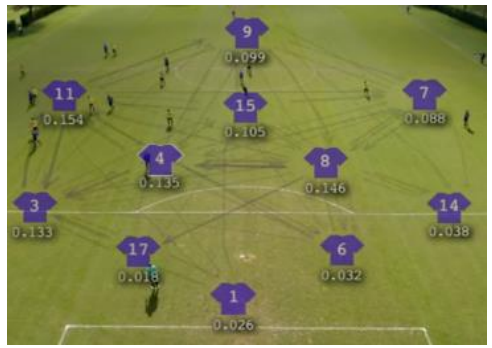
Movie Algorithms

Make a card for each algorithm.



2. Euclid GCD

The first recorded algorithm. 300 BCE.



4. Page Rank

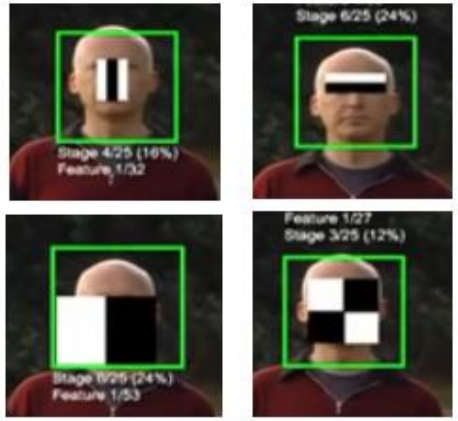
The multi-million dollar algorithm behind Google.

6. Netflix

Modern self-learning AI. Not static, continues to learn. Recommends movies.

1. Game of Nim

An example of how you can use an algorithm to always win.



3. Face Detection

A current algorithm. Your cell phone looks for these 4 patterns to find faces.

5. Kinect

An early self-learning AI. It taught itself how to find humans.

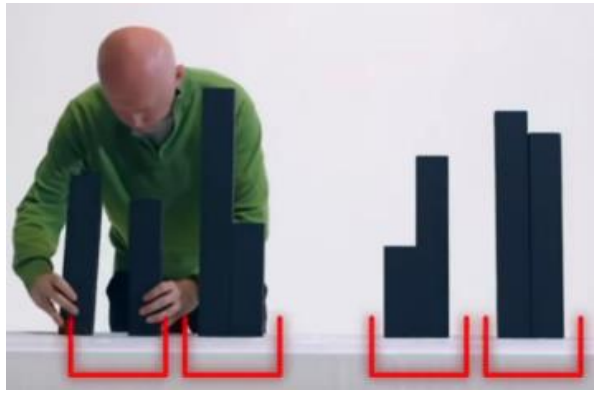
7. Amazon bots

Modern self-learning AI. Not static, continues to learn. Routes packages.

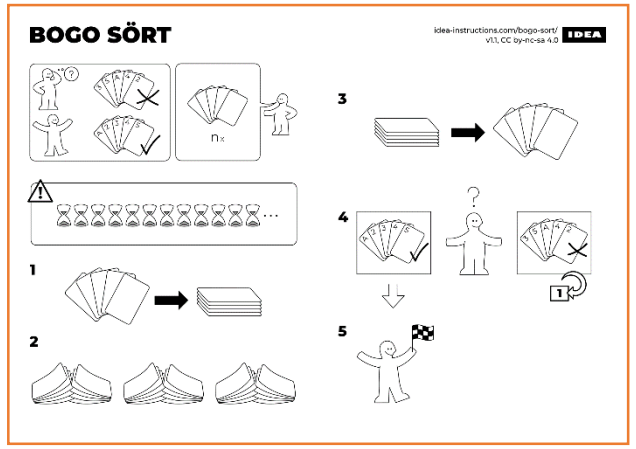
Sorting Algorithms

Terminology for the worksheet.
Don't make cards yet.

1. Bubblesort

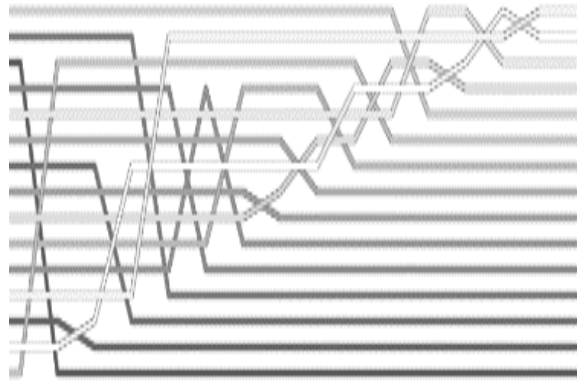


2. Mergesort

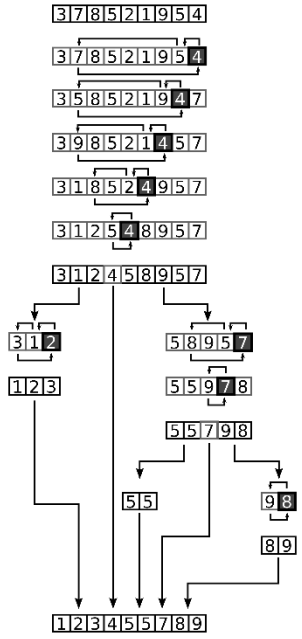


3. Bogosort

The slowest sorting algorithm.



4. Selection sort

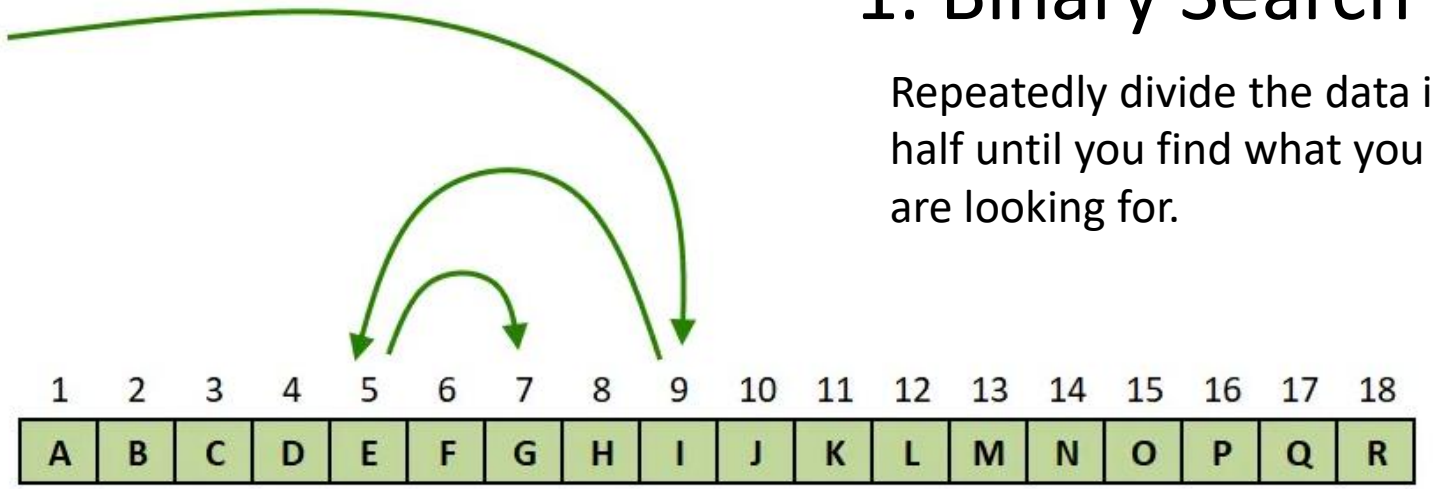


5. Quick sort

The fastest in-place sorting algorithm in the general case.

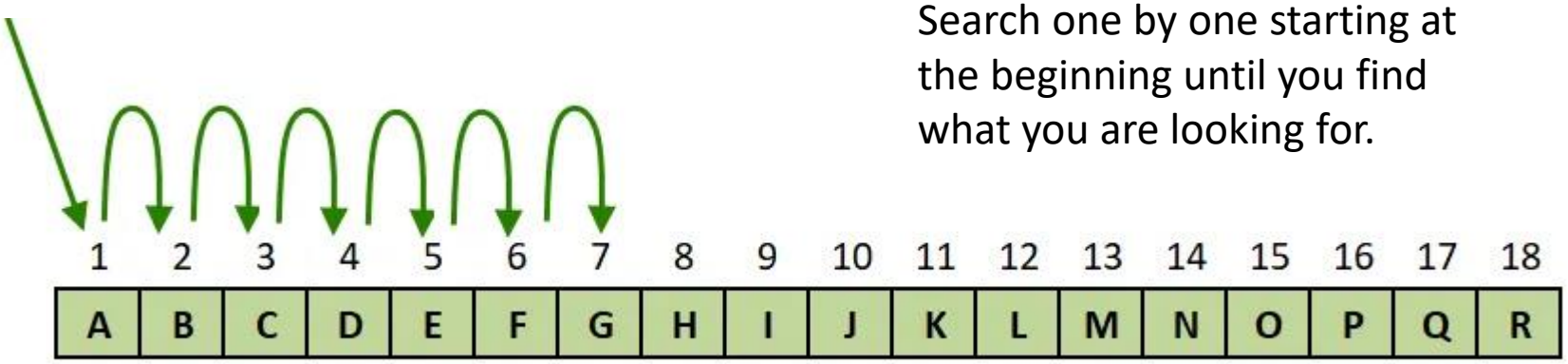
Searching Algorithms

Terminology for the worksheet.
Don't make cards yet.



1. Binary Search

Repeatedly divide the data in half until you find what you are looking for.



2. Linear Search

Search one by one starting at the beginning until you find what you are looking for.