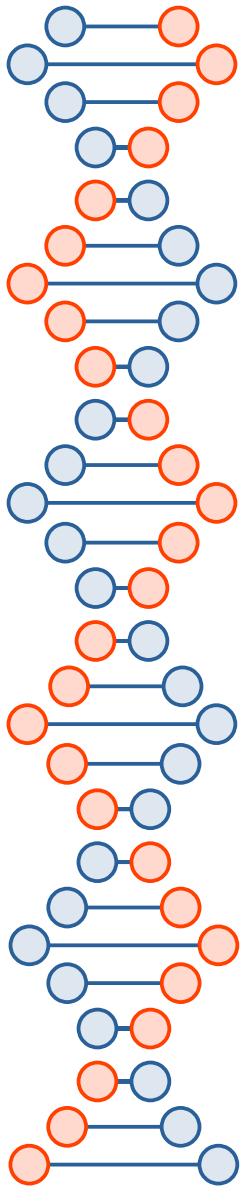
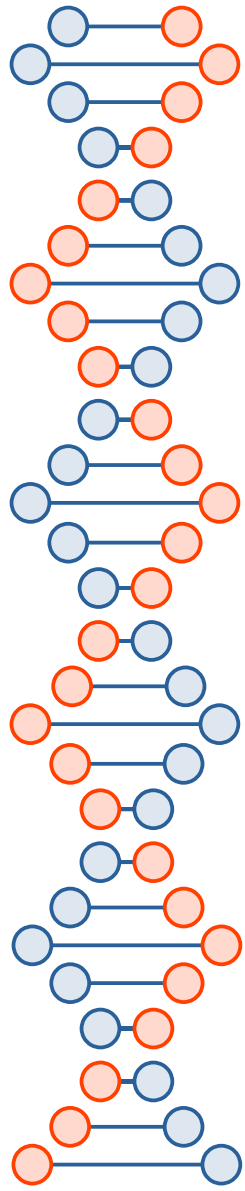


ALGORITHMS

WHAT ARE THEY????



- Some say that the word algorithm is used by computer people to make it sound scientific and difficult.
- Others say the word is used to explain something that even the programmers can't really explain.



An algorithm is really very simple. It is nothing more than a set of instructions describing how to perform a task.



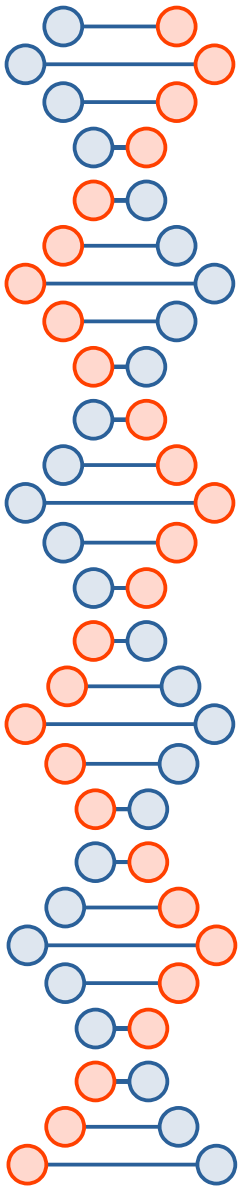
This is an algorithm

QUICK AND EASY TURKEY SLOPPY JOES

Lean ground turkey
Red onion, chopped
Green pepper
Tomato sauce
Barbeque sauce
Dried oregano
Ground cumin
Chili powder
Salt
Hamburger buns

In a skillet, cook turkey, onion, and pepper over medium heat for 6-8 minutes or until turkey is no longer pink and vegetables are tender, breaking up turkey into crumbles

Stir in tomato sauce, barbeque sauce, and seasonings. Bring to a boil. Reduce heat; simmer, uncovered, for 10 minutes to allow the flavors to blend, stirring occasionally. Serve on buns.

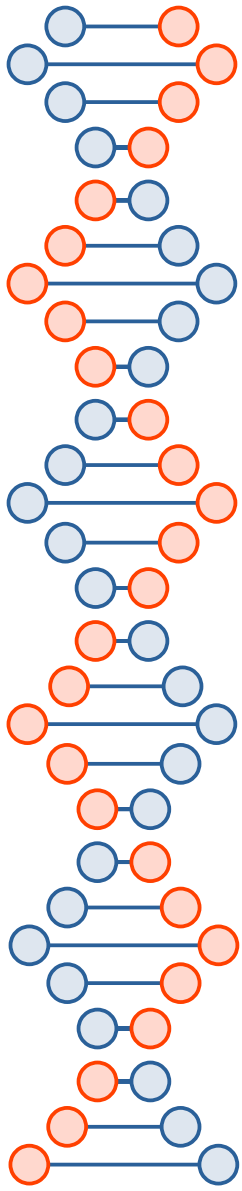


This is an algorithm

Directions to my place:

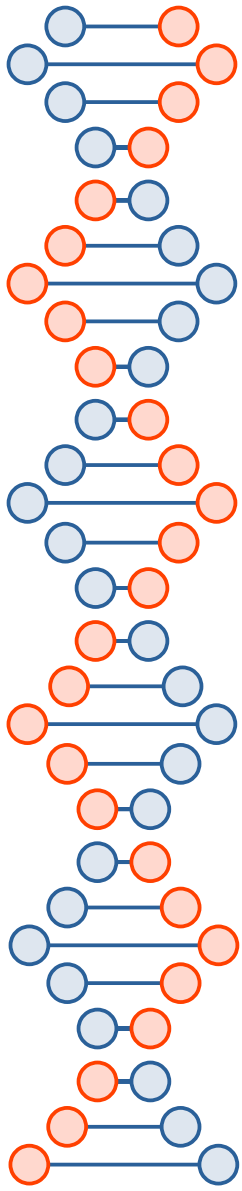
From Hope Valley Road take Woodcroft Parkway to the roundabout **AND** then take the third exit on Highgate to head up the hill. Do **NOT** take the first exit on Highgate as that heads down the hill. **OR** if you are coming from Fayetteville Road, at the roundabout take the first exit onto Highgate.

Take Highgate to the second left **AND** turn left into Woodwinds. Follow it to Hearthwood Circle and turn left there to follow the cul-de-sac to unit #5. **OR** you can take the third left turn onto Woodwinds Drive **AND** then take an immediate right onto Hearthwood Circle and follow the cul-de-sac to #5. Do **NOT** go to #7 as that's where Peg lives.



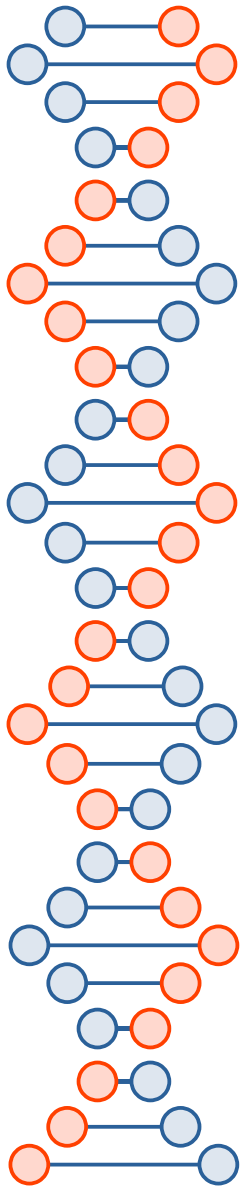
In computer talk...

- Algorithms are a sequence of instructions telling a computer what to do.
- And in computer talk, algorithms are reducible to three logical operations: AND, OR, and NOT.
- These operations can chain together in very complex ways, but at core, they are built of simple rational associations.



Examples of where algorithms are used

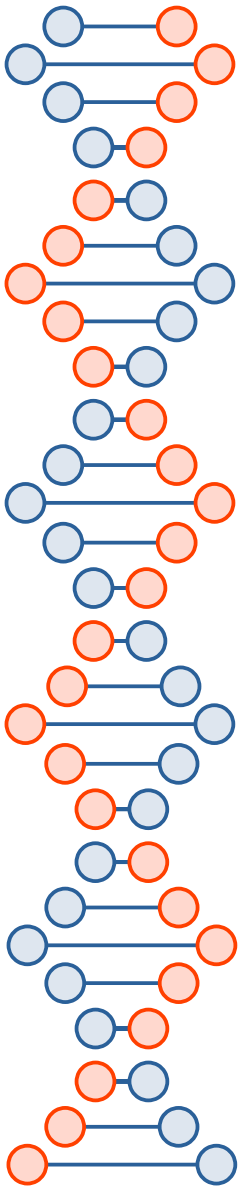
- The internet
- All online searching
- Lets emails know where to go
- Smartphone apps are nothing but algorithms



And are used in...

- Computer and video games - algorithmic storytelling
- Online dating
- Book recommendations
- Travel websites
- GPS mapping



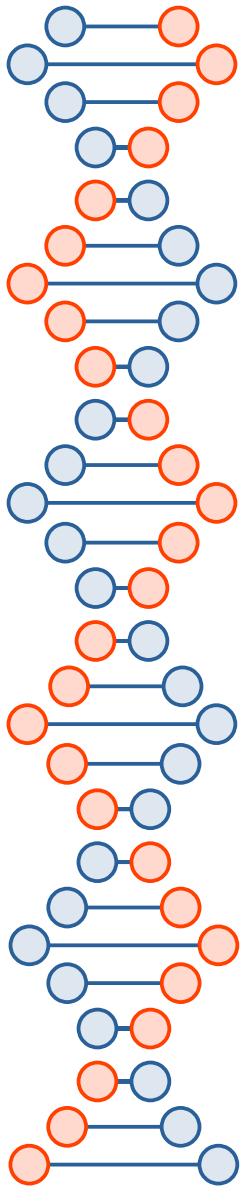


And are used to...

Help gadgets to...

- Respond to voice commands – “Hey Siri...”
- Recognize faces
- Sort photos
- Build cars
- Drive cars

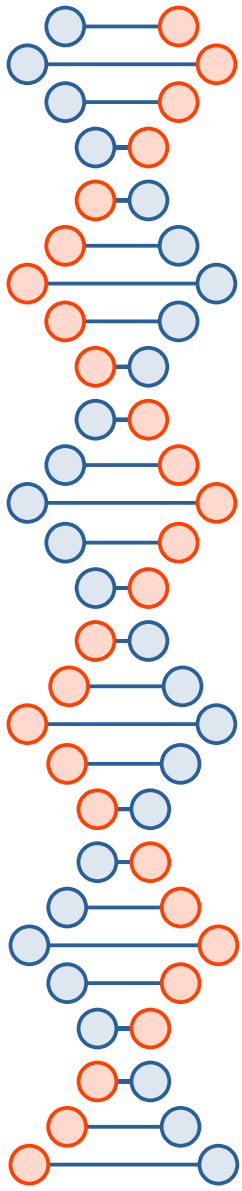




The Pew Center Report says...

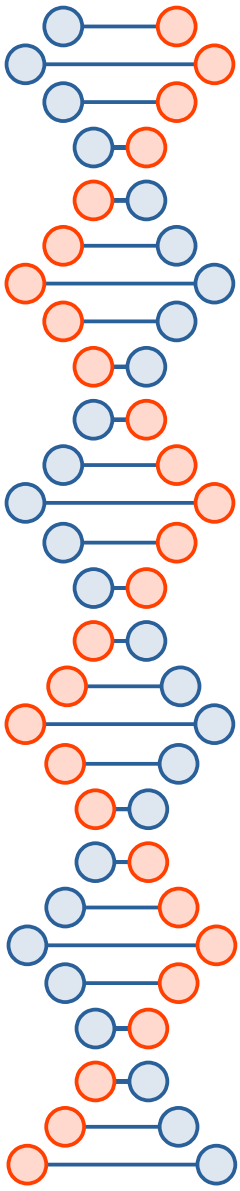
“...algorithms will help make sense of massive amounts of data, and this will spark breakthroughs in science, new conveniences and human capacities in everyday life, and an ever-better capacity to link people to the information that will help them.

[Algorithms] perform seemingly miraculous tasks humans cannot and they will continue to greatly augment human intelligence and assist in accomplishing great things.”



Algorithms can be helpful and interesting...

- They are designed to be helpful like the ones used to run the robot “Spot” from Boston Dynamics
- Or they can be fun – just ask the robots in the last video in this series

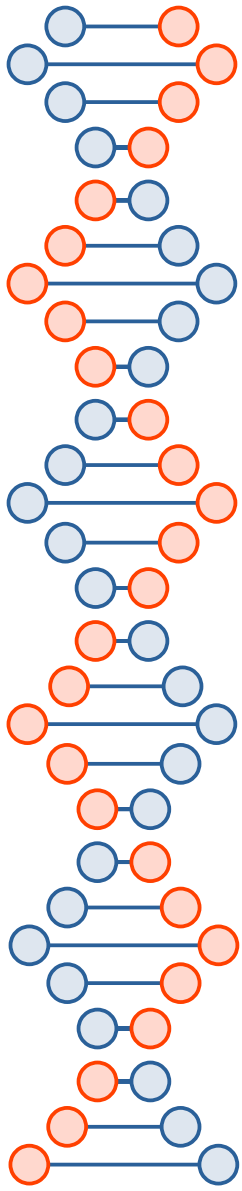


Videos of Robots-all robots use algorithms

- Introducing Spot – start at 1:01 on timeline
<https://www.youtube.com/watch?v=tf7IEVTDjng>
- Spot Launch
<https://www.youtube.com/watch?v=wlkCQXHEgjA>
- Atlas, Next Generation – start at 1:01 on timeline
<https://www.youtube.com/watch?v=rVlhMGQgDkY>
- What's New Atlas – play to very end for outtakes
<https://www.youtube.com/watch?v=fRj34o4hN4I>

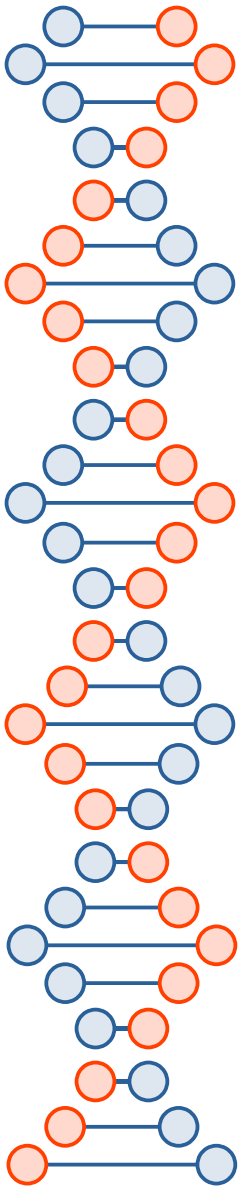
Videos of Robots continued

- New Robot Makes Soldier Obsolete – stop at 1:51 on timeline
https://www.youtube.com/watch?v=y3RIHnK0_NE
- Combat Robots – shows fake but even fake uses algorithm – stop at 1:25 on timeline
<https://www.youtube.com/watch?v=zldqiwHsul8>
- Do You Love Me – real not fake – stop at 1:58 on timeline
<https://www.youtube.com/watch?v=fn3KWM1kuAw>



Dance was for more than fun...

- To enable robots to predict human movements, researchers typically borrow algorithms from music and speech processing. These algorithms are designed to align two complete time series or sets of related data
- Scientists have learned that computers can learn on their own if given a few simple instructions



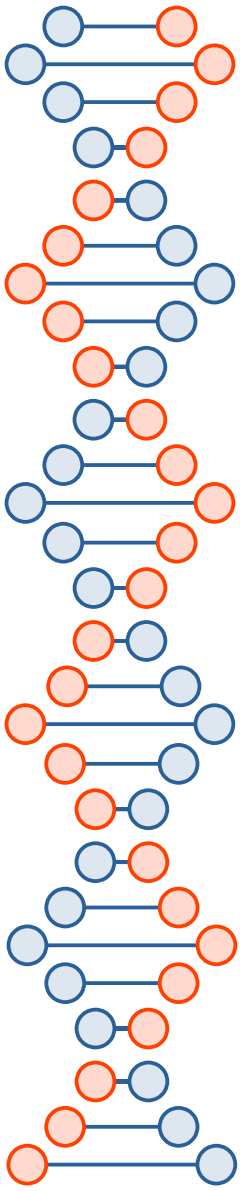
To review the good things...

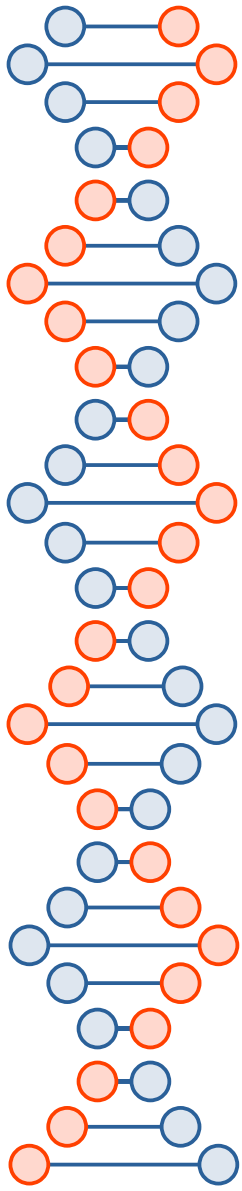
Algorithms can:

- Improve our health (from Fitbit devices to apps that can identify skin cancer)
- Develop a professional network to advance a person's career
- Quickly research and locate a product we want at the best price.
- Recommend products, websites, and movies we might like.
- Suggest new Facebook friends and LinkedIn contacts.
- Quickly get us a mortgage or car loan (if we qualify)
- Distribute resources where they are most needed, for example, shifting goods among a company's business centers.
- Run traffic lights to control traffic.

WARNING!!

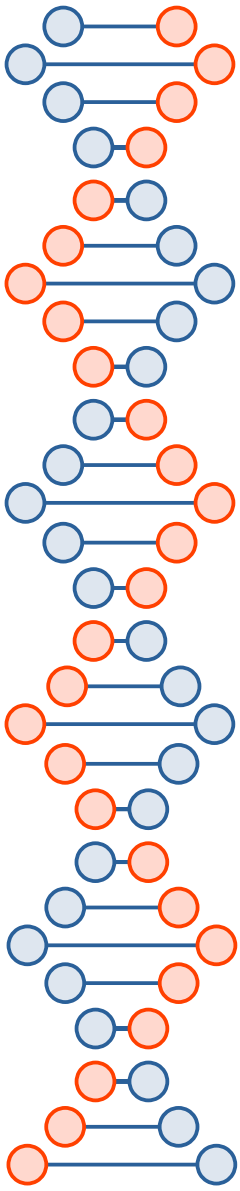
Algorithms are incredibly helpful in our everyday life, but there are many problems as well...





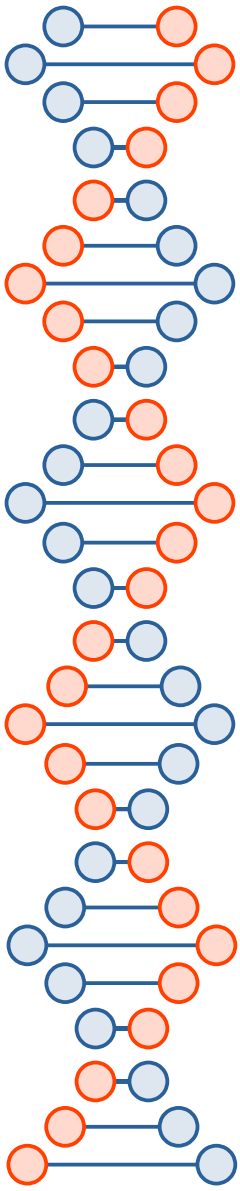
Humanity and human judgment can be lost in the pursuit of profit and efficiency

- Algorithms gather volumes of data to influence decisions from making movie recommendations to helping banks determine the creditworthiness of individuals.
- Algorithm operators and developers need to repeatedly ask themselves: **Will we leave some groups of people worse off as a result of the algorithm's design or its unintended consequences?**



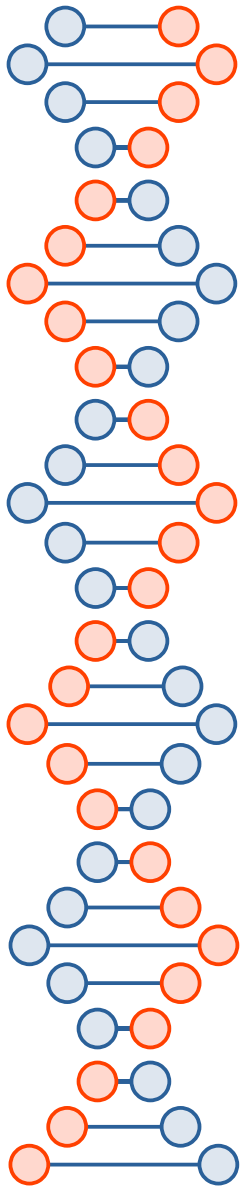
Biases of programmers and dataset

- Algorithm creators (code writers), even when trying for inclusiveness, objectivity and neutrality, build into their creations their own perspectives and values.
- Even datasets with billions of pieces of information do not capture the fullness of people's lives and the diversity of their experiences.
- Datasets are imperfect since they aren't a representative sample of everyone.



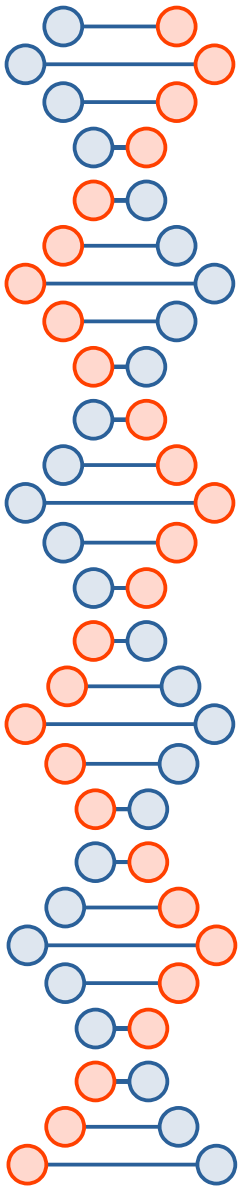
Can lead to unemployment

An anonymous CEO said, “If a task can be effectively represented by an algorithm, then it can be easily performed by a machine. The negative trend I see here is that – with the rise of the algorithm – humans will be replaced by machines/computers for many jobs/tasks. What will then be the fate of Man? I foresee algorithms replacing almost all workers with no real options for the replaced humans.”



The other side of the foregoing CEO's Doom and Gloom

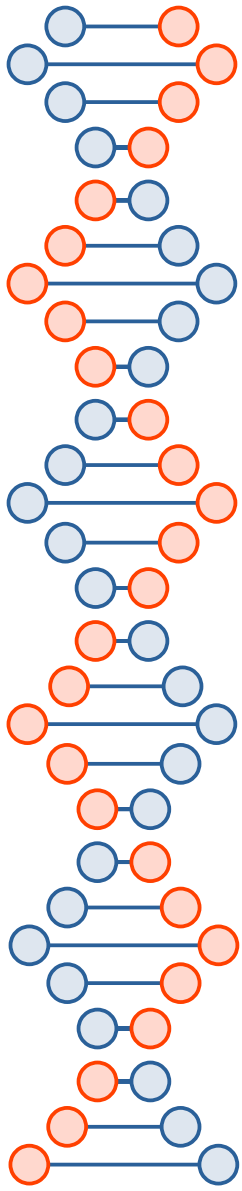
- It is time to rethink what we mean by “work” and what we mean by “earning a living”
- Instead of 80 hour work weeks, maybe it would be better if we could cut back “working” hours and enjoy more time with family and friends
- Not having to work to earn a living would allow people the opportunity to do altruistic “work” and help others
- Not having to work to earn a living would allow creative people to bloom



Good and Bad...

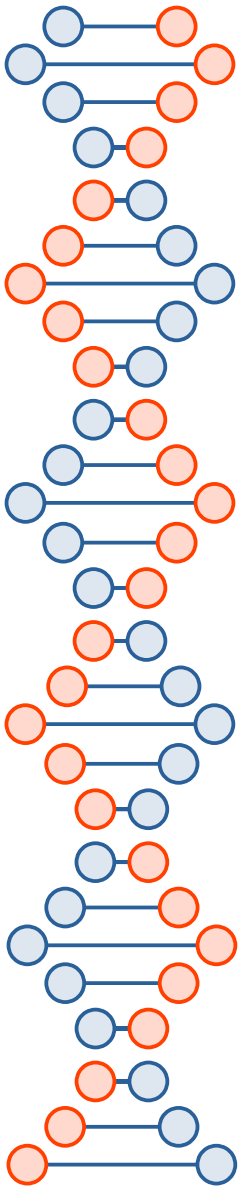
Many algorithms have potential both for good or bad by determining—

- Who gets insurance at what cost. Brokers often cull insufficient data from online and other sources to decide yes or no on credit or insurance.
- Who should be on the 'no fly list.' This is a necessary security measure in most cases. However, many people have been misidentified as 'threats' because of duplicate names, etc.



Algorithms on websites and in the news, etc.

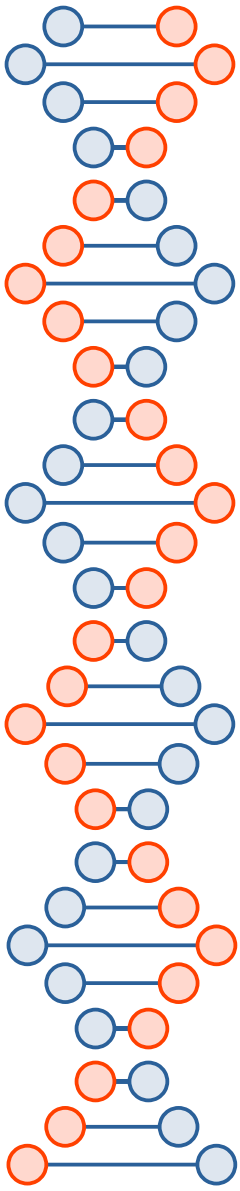
- Let's see what Lester Holt of NBC News has to say



Lester Holt Video

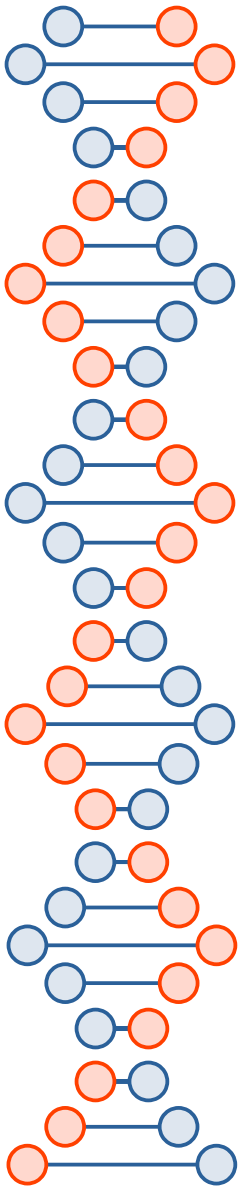
Lester Holt on Algorithms and Internet Echo Chambers:

<https://www.youtube.com/watch?v=A5i0gkB3urc>



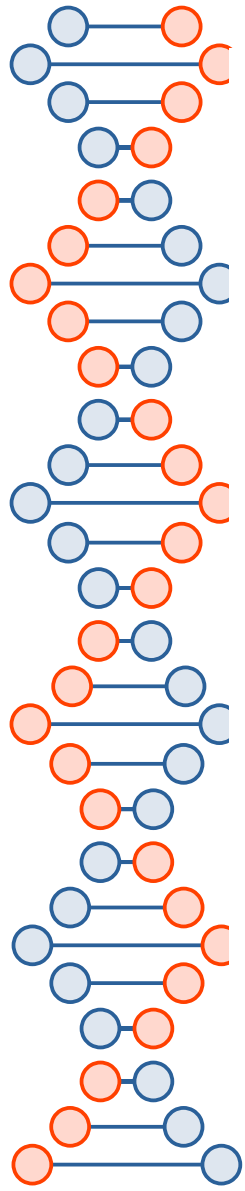
Algorithms on websites, in news, etc.

- Create filter bubbles and divisiveness
- Limit exposure to wider range of ideas and reliable information
- Ability to shape decisions without people knowing they are doing it



Algorithms can have consequences when misapplied...

- Many experts are concerned over general lack of transparency and accountability and say we need to have standards of ethics to govern the misuse of algorithms.
- Many question the 'right' of programmers to devise questions for algorithms that may be invasive (e.g., personality traits, political alignment, sexual orientation, etc.).
- Secret algorithms are being used against minority groups with discriminatory consequences. For example in determining where police resources are deployed and in deciding jail sentences when some courts rely on computer formulas to determine the length of sentence and parole.
- State political boundaries are invariably gerrymandered to give the party in power an unfair advantage in elections.



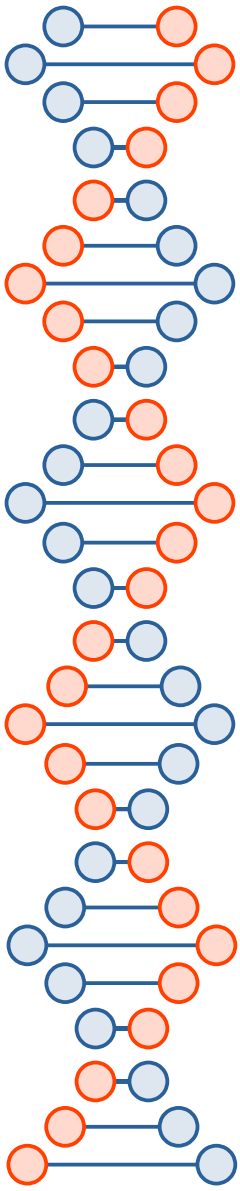
ARE YOU COMING TO BED?

I CAN'T. THIS IS IMPORTANT.

WHAT?

SOMEONE IS WRONG ON THE INTERNET.

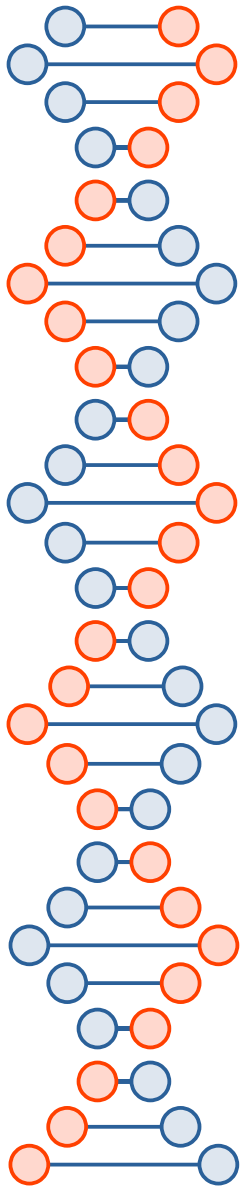




Social Media...

Algorithms on social media:

- leads us into a bubble of one sided information without offering the other side as they don't "think" we want to hear that
- Have the ability to shape beliefs without people knowing they are doing it
- Help spread conspiracy theories and other divisive rhetoric



How can we find out about...

- Qanon and what it is
- How not to fall down the rabbit hole ourselves
- How to have control over some of the algorithms on Facebook, Twitter, Instagram, YouTube...

Well, you'll have to...

- Join us next month to find out how to try and tame the tiger named algorithm who hunts down prey on Social Media.
- Thursday, March 18, 2021
at 2 PM

