A scenic view of a mountain range with a valley in the distance under a clear blue sky. The foreground shows a rocky, forested slope on the right. The middle ground features a series of mountain ridges and valleys, with a prominent peak in the center. The background shows a vast valley with a river or road winding through it, and distant mountains under a clear blue sky.

Welcome to Apple SIG  
Artificial Intelligence  
November 26, 2019



# News and Views

## Apple Reacts to iOS 13 and iPadOS 13 Release Problems

Anyone who has experienced the release of iOS 13, iPadOS 13 or macOS Catalina is likely aware of the many problems and seemingly continuous attempts to fix them.

Will it happen again?

- iOS 13 initially released in September
  - Apps crashed or launched slowly
  - Cellular signal was inconsistent
  - There were user interface errors in apps like Messages, system-wide search issues and problems loading emails
  - Some new features were either delayed or are still missing



**CONTRIBUTOR: Bob Kline**

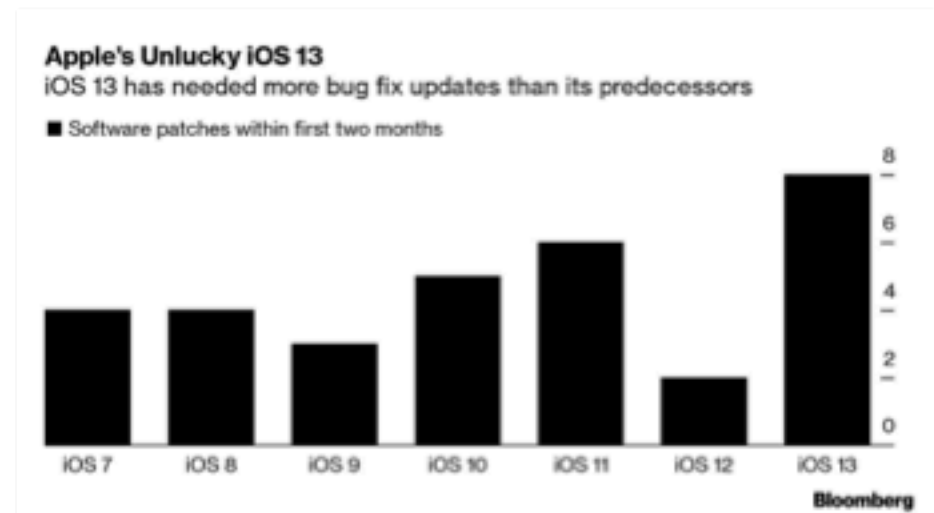


# News and Views

## Apple Reacts to iOS 13 and iPadOS 13 Release Problems

Apple recently 'kicked off' a new software testing approach for all operating systems to reduce the number of 'bugs' in released software.

- Development teams will control the introduction of unfinished coding to "daily builds"
- Testing teams will be able to selectively enable unfinished features to carry out acceptance tests
- Early, internal software versions should be more usable and bug-free
- New features can be delayed until future releases
- Applies to iOS, iPadOS, watchOS, tvOS and macOS

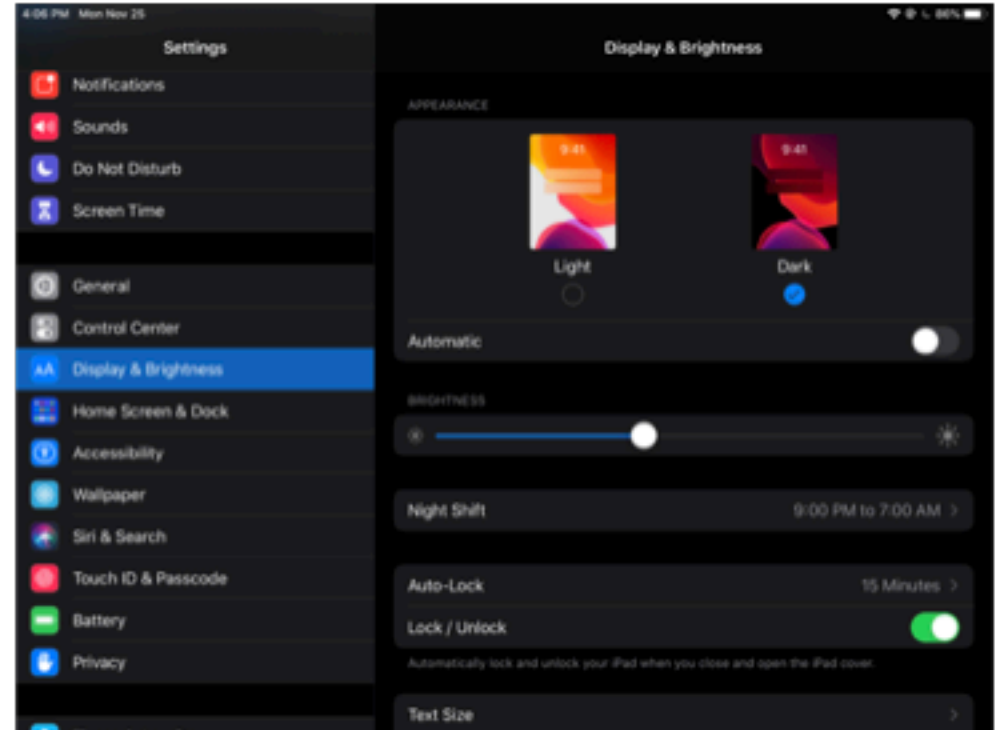
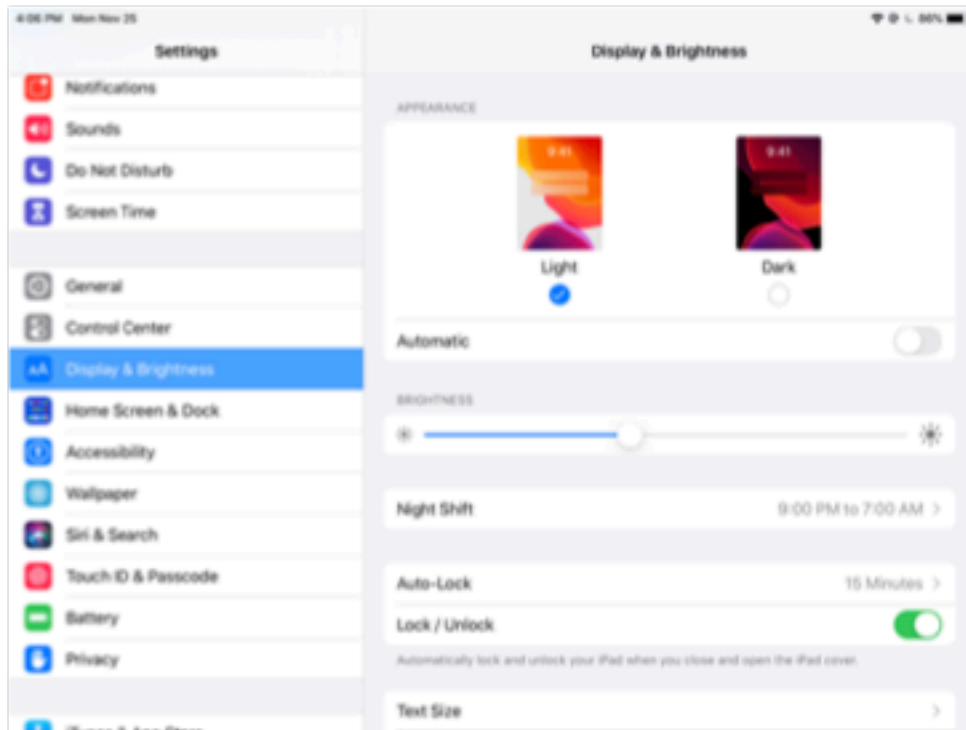


Source: [Bloomberg](#)

**CONTRIBUTOR: Bob Kline**

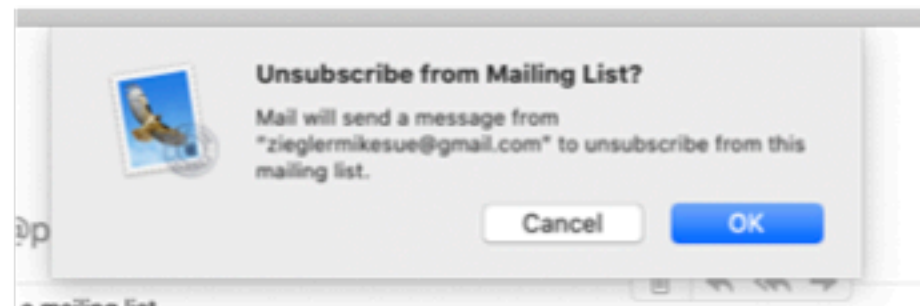
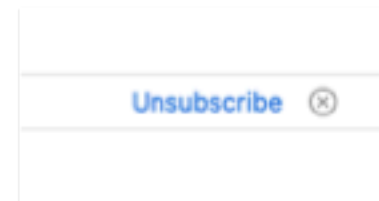
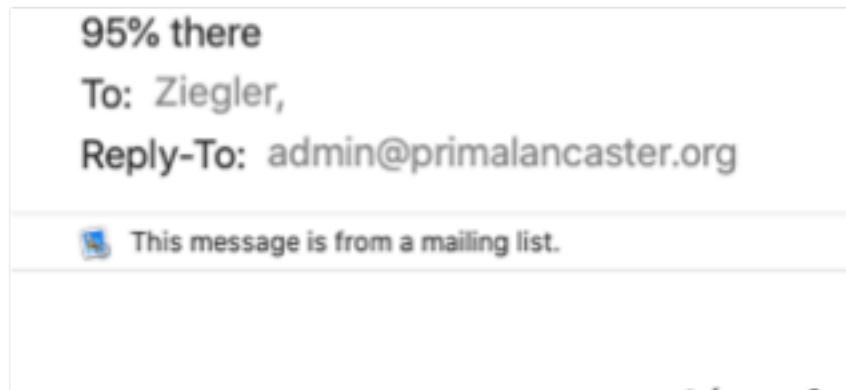
# TIPS AND TRICKS

## USING DARK MODE ON AN IOS DEVICE (ipad or iPhone)



# TIPS AND TRICKS

## UNSUBSCRIBE FROM A MAILING LIST



# Artificial Intelligence Talk Outline

Presenter - Steven Lynn

- ◆ Acknowledgements
- ◆ Introduction to Artificial Intelligence (AI)
- ◆ How is AI being used today
- ◆ How does it work
- ◆ What does the near and far future hold
- ◆ What is the good and bad side of AI

# ACKNOWLEDGEMENTS

Popular Science, special edition, “The new artificial intelligence” 2019

Artificial Intelligence *for* Dummies, John Mueller and Luca Massaron 2018

Robots Unlimited, David Levy 2006

Various Time Magazine articles

Various Philadelphia Inquirer articles

The Internet

# Definition of AI

## I. Simple

### **Merriam-Webster**

1. A branch of computer science dealing with the simulation of intelligent behavior in computers
2. The capability of a machine to imitate intelligent human behavior

## II. A bit more robust

### **Wikipedia**

...intelligence demonstrated by machines, in contrast to the **natural intelligence** displayed by humans. ...machines (or computers) that mimic "cognitive" functions that humans associate with the human mind, such as "learning" and "problem solving"

# Definition of AI

## III. Wordy

### **Encyclopedia Britannica**

**Artificial intelligence (AI)**, the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings. The term is frequently applied to the project of developing systems endowed with the intellectual processes characteristic of humans, such as the ability to reason, discover meaning, generalize, or learn from past experience. Since the development of the digital computer in the 1940s, it has been demonstrated that computers can be programmed to carry out very complex tasks—as, for example, discovering proofs for mathematical theorems or playing chess—with great proficiency. Still, despite continuing advances in computer processing speed and memory capacity, there are as yet no programs that can match human flexibility over wider domains or in tasks requiring much everyday knowledge. On the other hand, some programs have attained the performance levels of human experts and professionals in performing certain specific tasks, so that artificial intelligence in this limited sense is found in applications as diverse as medical diagnosis, computer search engines, and voice or handwriting recognition.

# *Terms that you will see used in AI:*

**Algorithm**

**Machine Learning**

**Deep Learning**

**Neural Networks**

# TWO CATEGORIES OF AI

**Weak AI (narrow)** - is artificial intelligence that is focused on one specific task. Example - Siri being able to understand speech and speaking back.

**Strong (broad or general) AI** - emulates the intelligence of a human being in analyzing any problem rather than just one specific problem. It can learn on it's own without explicit instructions. Example - a futuristic robot that can move, talk and think much like a human being and be as intelligent if not more so in many areas.

# SOME GROUPS WORKING ON AI WITHIN THE US:

## COMPANIES:

IBM

Google

Microsoft

Apple

Amazon

Facebook

## UNIVERSITIES:

MIT

Harvard

Stanford

Univ. of California

Carnegie Mellon

## PRIVATE AND GOVERNMENTAL ENTITIES:

OpenAI

National Science and Technology Council

The Military



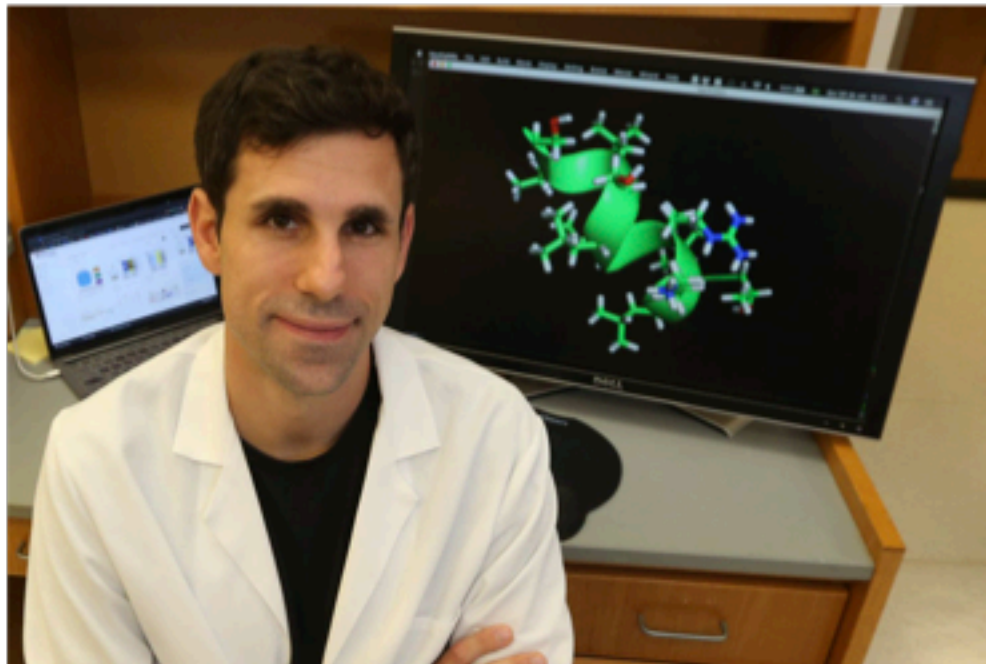
## **“Weak” AI is being used today in the following areas:**

- ◆ Medical Field
- ◆ Language Recognition and Processing
- ◆ Drones (military / personal / commercial)
- ◆ Car Technology / Driverless Cars
- ◆ Industrial Robots
- ◆ Thermostats
- ◆ Website Search Engines
- ◆ Games

## **First, the Medical Area:**

“Penn looking at AI to beat superbugs”

Philadelphia Inquirer, Tom Avril 11/3/19

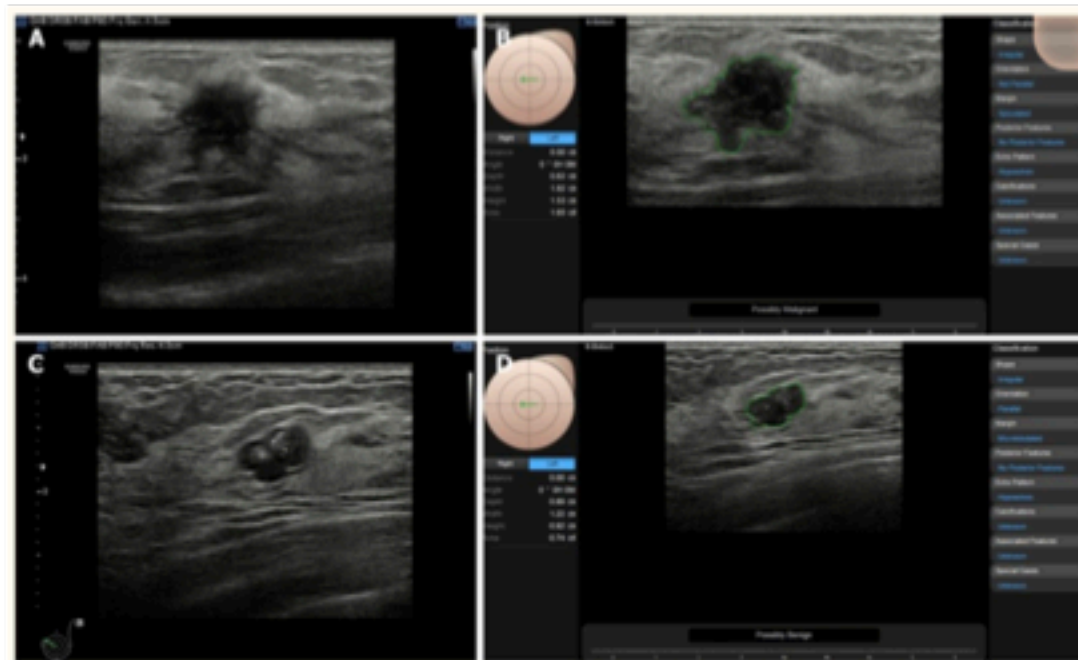


*Lab technician Cesar de la Fuente at his computer*

## Medical Area, continued:

“How deep learning could be the next step in Cancer Detection”

Popular Science special edition 2019  
shown are breast cancer ultrasounds



World Journal of Radiology 2/28/19

Samsung RS80A ultrasound system

## **Medical Area, continued:**

Many more everyday articles on how AI can be or is being in the field of medicine:

*From Popular Science special edition:*

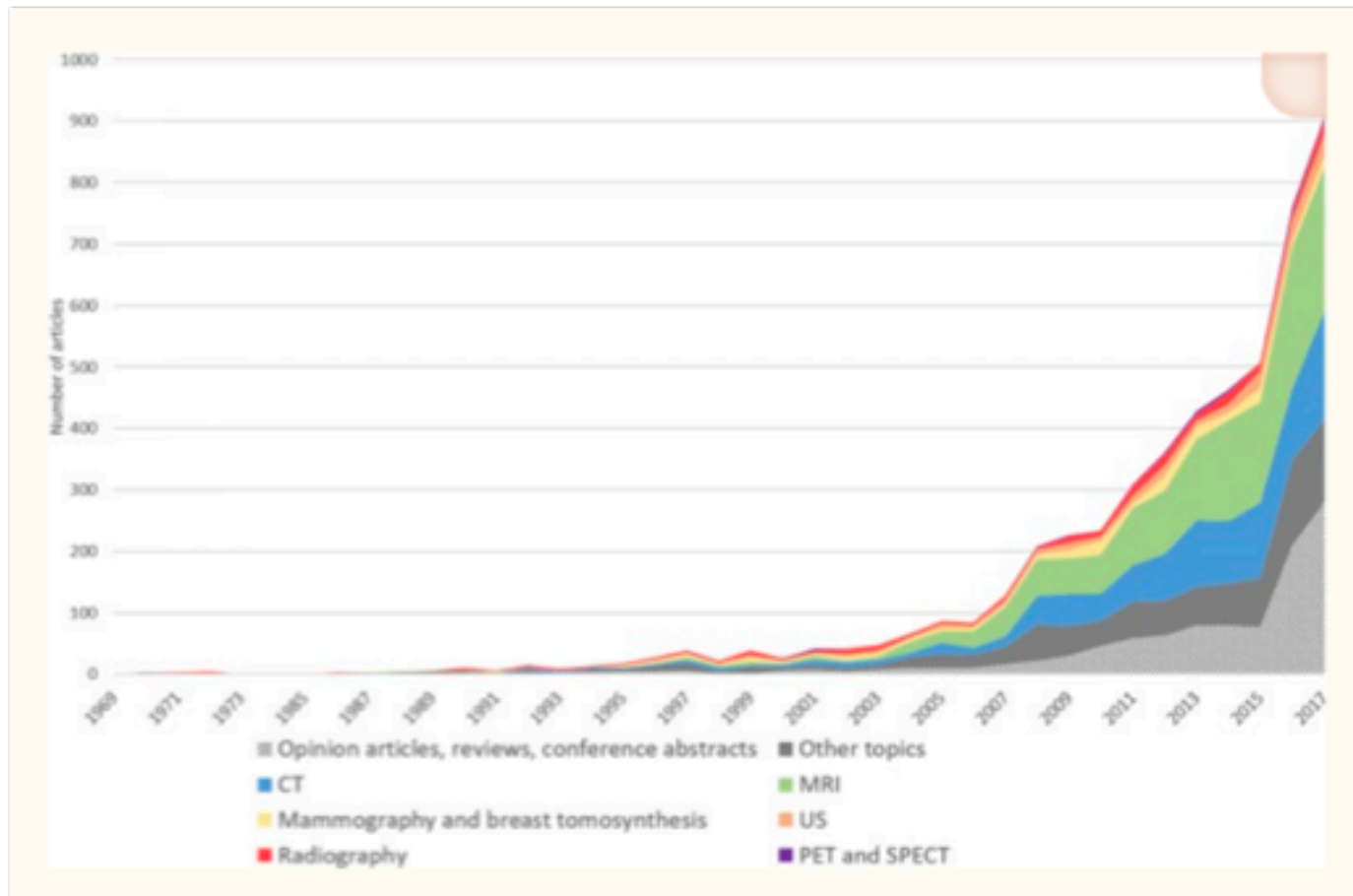
- “How Artificial Intelligence Can Make Drugs Better”
- “How Deep Learning Could Be the Next Step in Cancer Detection”
- “An AI Algorithm Can See by Your Face Whether You’re in Pain”
- “AI Could Make MRI Scans as Much as 10 Times Faster”

*From Artificial Intelligence for Dummies:*

- “Seeing AI in Prosthetics”
- “Making Surgical Suggestions”
- “Addressing Special Needs”
- “Wearing Helpful Monitors”

## Medical Area, continued:

AND....A large number of professional articles:



European Radiology Experimental 12/2/18

## Games:

IBM'S DEEP BLUE BEATS REIGNING WORLD CHAMPION UNDER REGULAR TIME CONTROLS

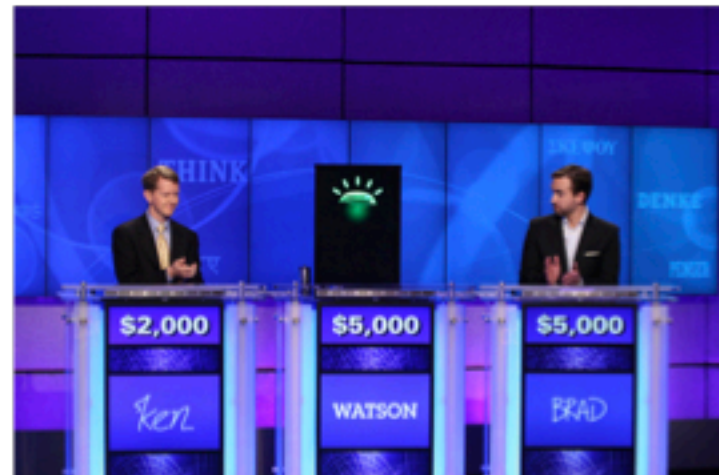
In May of **1997**, IBM's Deep Blue computer beat the world chess champion, Russian



Wikipedia, Deep Blue at the Computer History Museum

**“Computer Wins on ‘Jeopardy!’: Trivial, It’s Not”**  
New York Times, John Markoff Feb 16, 2011

IBM's Watson took on Ken Jennings and Brad Rutter in **2011** and beat them with it's rapid



New York Times, Watson beats Ken Jennings and Brad Rutter

# How does it work?

## *Definition of terms:*

**Algorithm** - A generic term meaning a set of rules to be followed in calculations or other problem solving operations, especially by a computer.

**Symbolic reasoning** - using symbols instead of finite values especially in mathematical computation. Example: algebraic equations.

**Expert systems** - are designed to solve complex problems working through bodies of knowledge. Example: Spelling

# How does it work?

*Before AI, starting in 1950's:*

Simpler algorithms such as in performing mathematical computations. Example: spread sheet programs

Symbolic reasoning

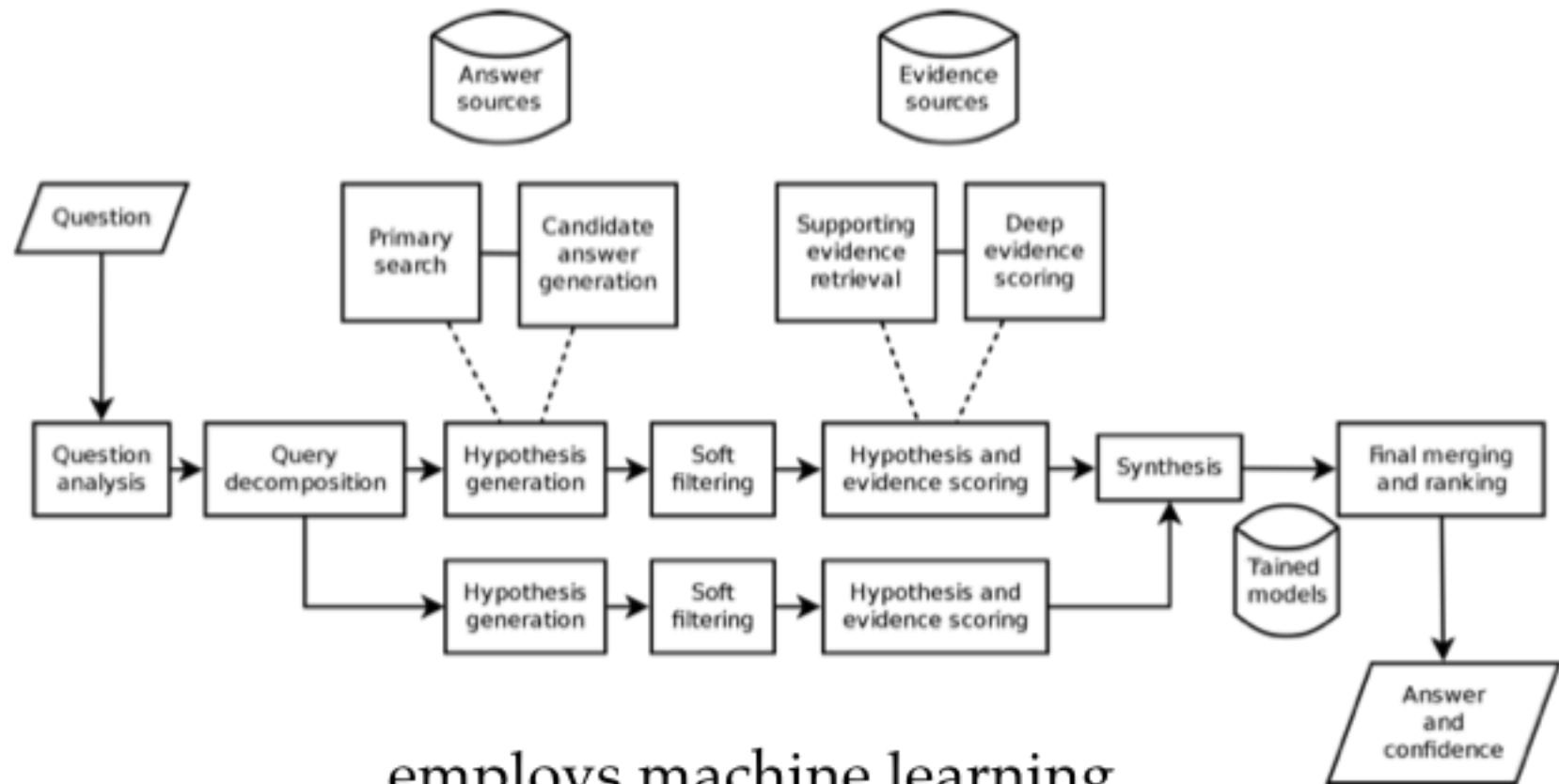
Expert systems

# How does it work?

## *Artificial Intelligence:*

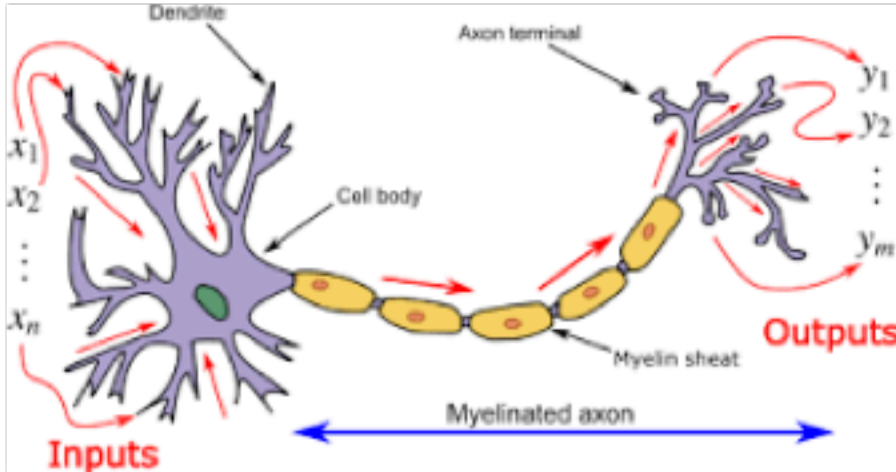
- Phrase was coined at a Dartmouth conference in 1956
- Machine learning - since the 1980's, program algorithms that improve without explicit instructions by using inference, patterns and additional data. It's considered to be a subset of artificial intelligence
- Deep learning - since the 2010's and a subset of machine learning, allows machines to solve complex problems even when using a data set that is very diverse and unstructured.
- Neural Networks - algorithms inspired by the human brain. They are used quite a lot in deep learning.

# Flow chart for IBM's Watson



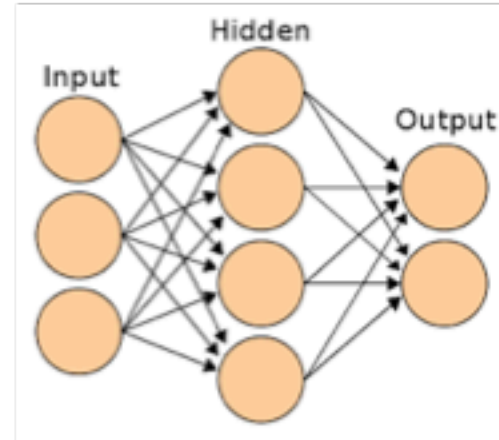
# Neural Networks

Brain



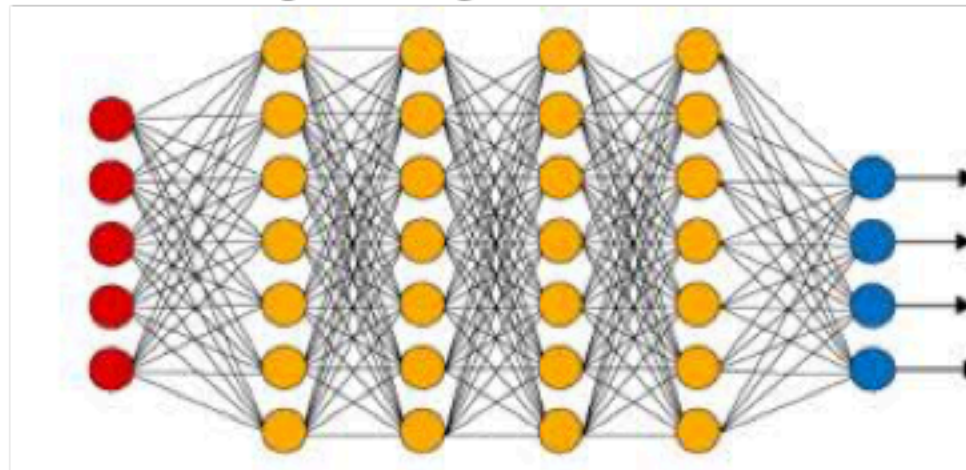
[en.wikipedia.org](http://en.wikipedia.org)

Simple Neural Network



[AnalyticsVidhya.com](http://AnalyticsVidhya.com)

Deep Learning Neural Network



[dvl.in.tum.de](http://dvl.in.tum.de)

## **What does the near future hold:**

- Continued development in AI in the areas mentioned before such as language recognition, cars, robots, games and the medical field.
- Continued improvement in computer robustness.
- Continued improvement in machine and deep learning as it is applied to various fields such as medicine.

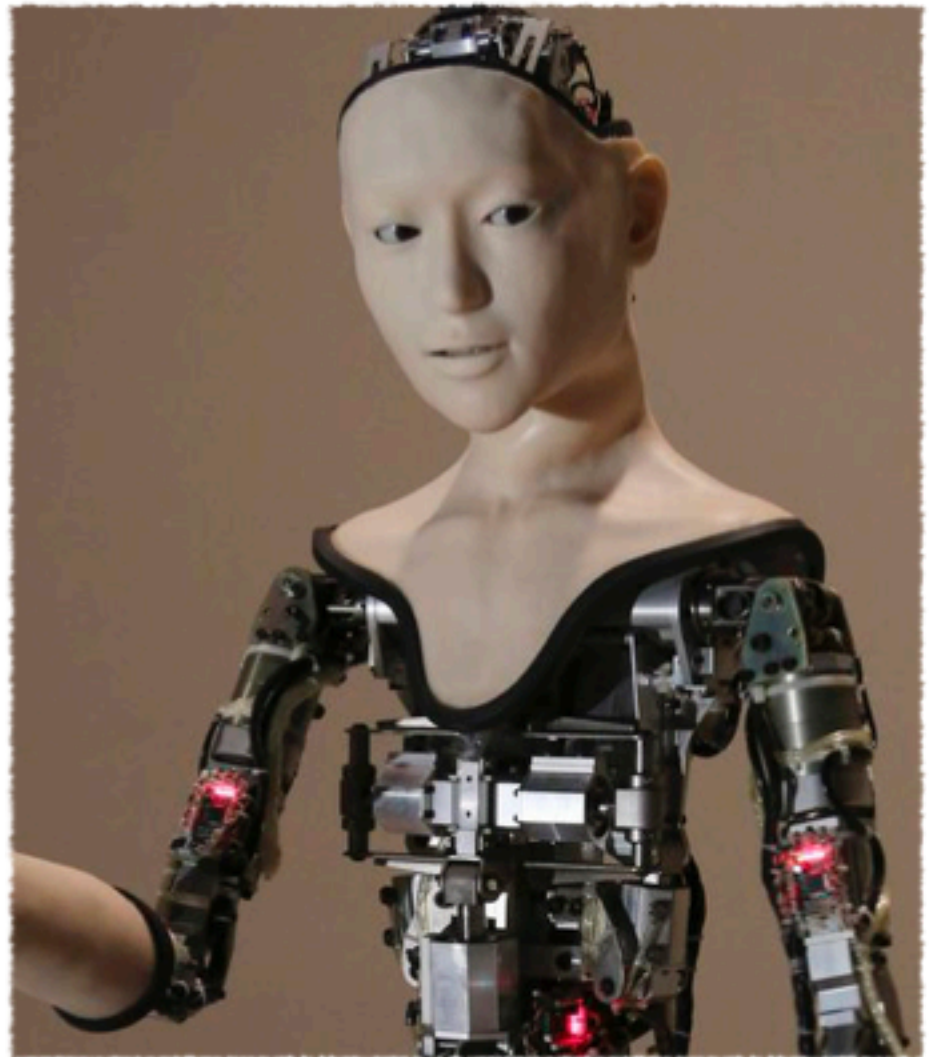
## **What does the far future hold:**

- ◆ Difference of opinion amongst researchers.
- ◆ Some liberal thinking people talk of a future point of singularity, also called super intelligence.
- ◆ Other people say this is impossible.

# Point of Singularity

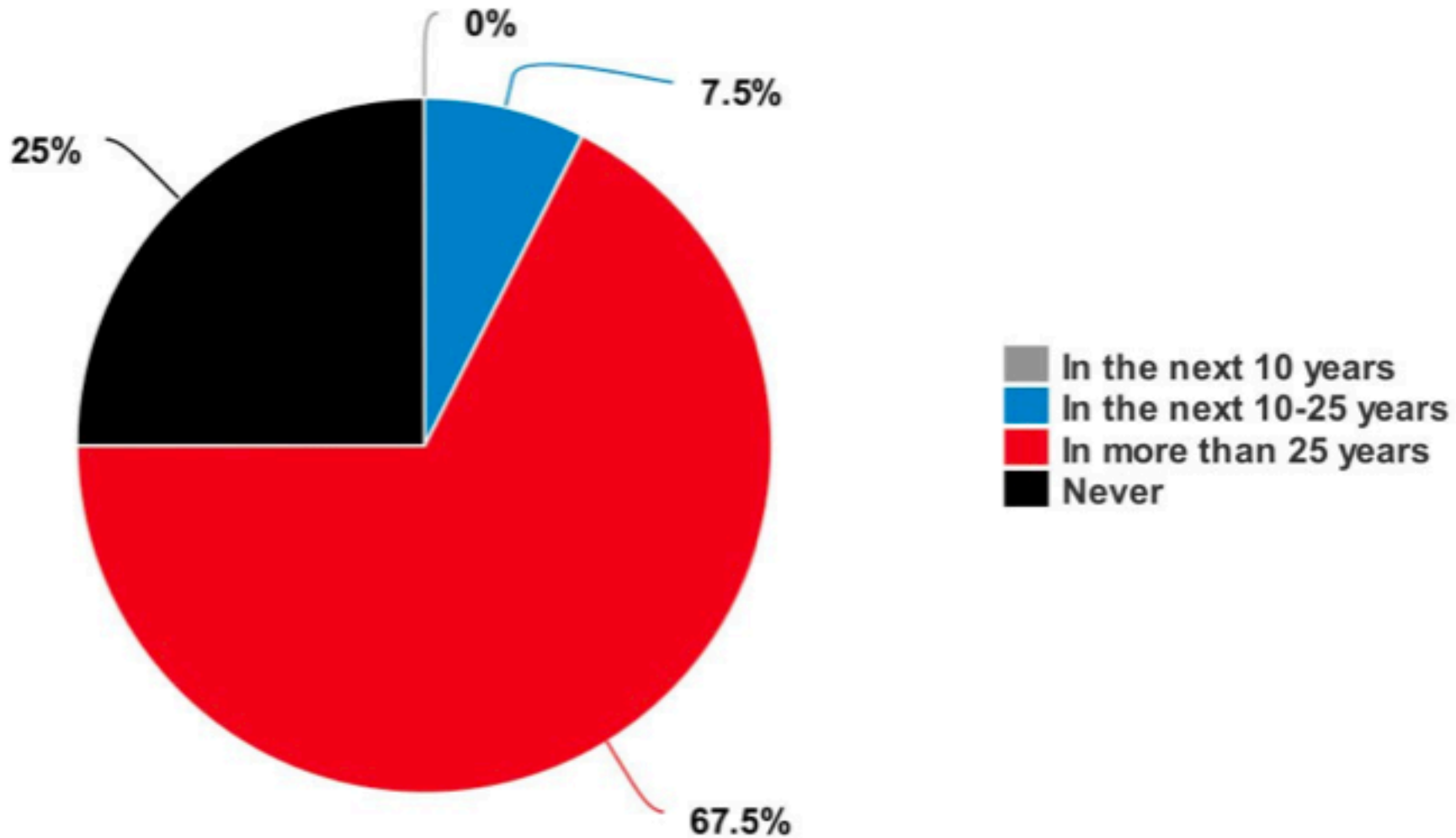
The Singularity will mark the moment when artificial intelligence becomes smarter than humans.

As Wikipedia defines it: The **technological singularity** (or the **singularity**) is the hypothesis that the invention of artificial super intelligence (ASI) will abruptly trigger runaway **technological** growth, resulting in unfathomable changes to human civilization.



## When Will Superintelligence Arrive?

A survey of AI researchers shows they think it's still a long way off.



For those that are afraid that computers will take over the human race, there is some good news !

Computers don't feel anything, have no emotions nor any empathy. Without the ability to feel, a computer can't see things from the perspective of a human.

They do not have a conscience as we do so there is no inherent moral code, knowledge of right or wrong, or whether something is fake or not. They simply respond to their program.

Per Artificial Intelligence for Dummies, page 19: "Any rumors you heard about AI taking over the world or becoming superior to people are just plain false."

# The good and the bad

The Good: AI will continue to help us in many ways

The Bad:

- \* Loss of jobs
- \* Nothing is perfect - super computers or robots will fail from time to time
- \* Our brains will get used less and less
- \* Nefarious people will program super computers to do bad things
- \* Governments will use it against other governments

# Hype

## Movies:

- ◆ 2001: A Space Odyssey
- ◆ The Terminator
- ◆ Blade Runner
- ◆ The Matrix
- ◆ Her
- ◆ I, Robot

**Movie "I, Robot" based on Isaac Assimov's book and laws for robots:**

1. A **robot** may not injure a human being or, through inaction, allow a human being to come to harm.
2. A **robot** must obey the orders given it by human beings except where such orders would conflict with the First Law
3. A **robot** must protect its own existence as long as such protection does not conflict with the First or Second Laws



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