

# "Wat is AI nou eigenlijk?"

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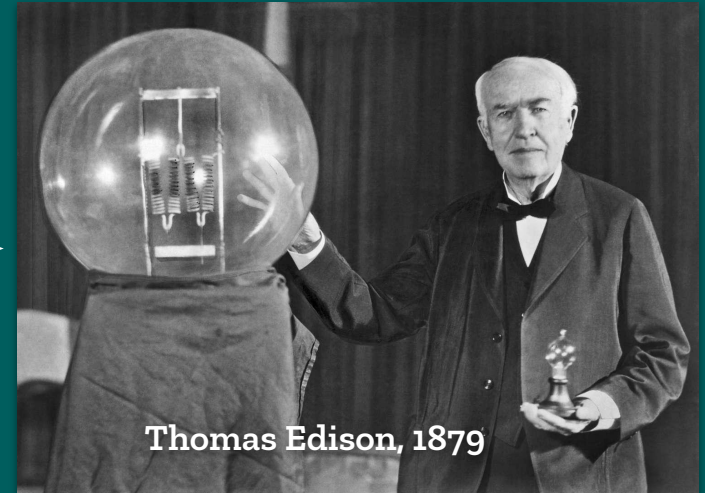
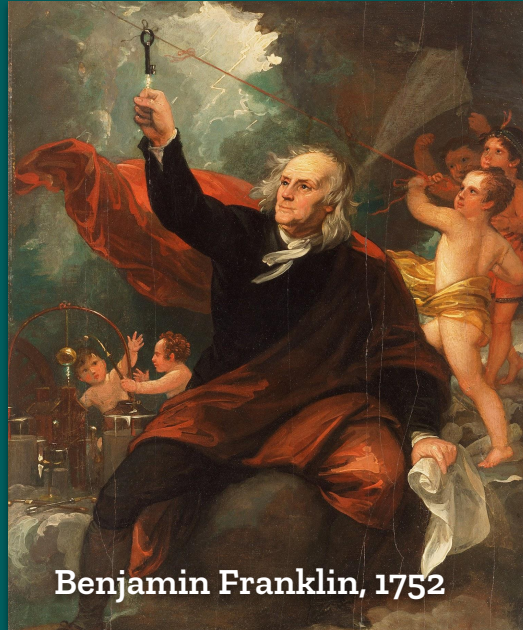
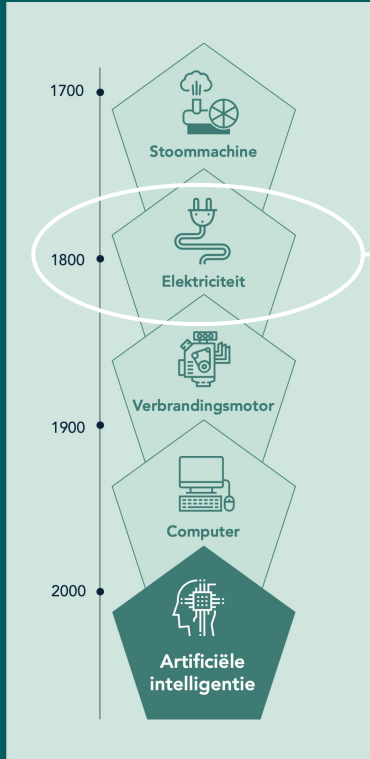
in 

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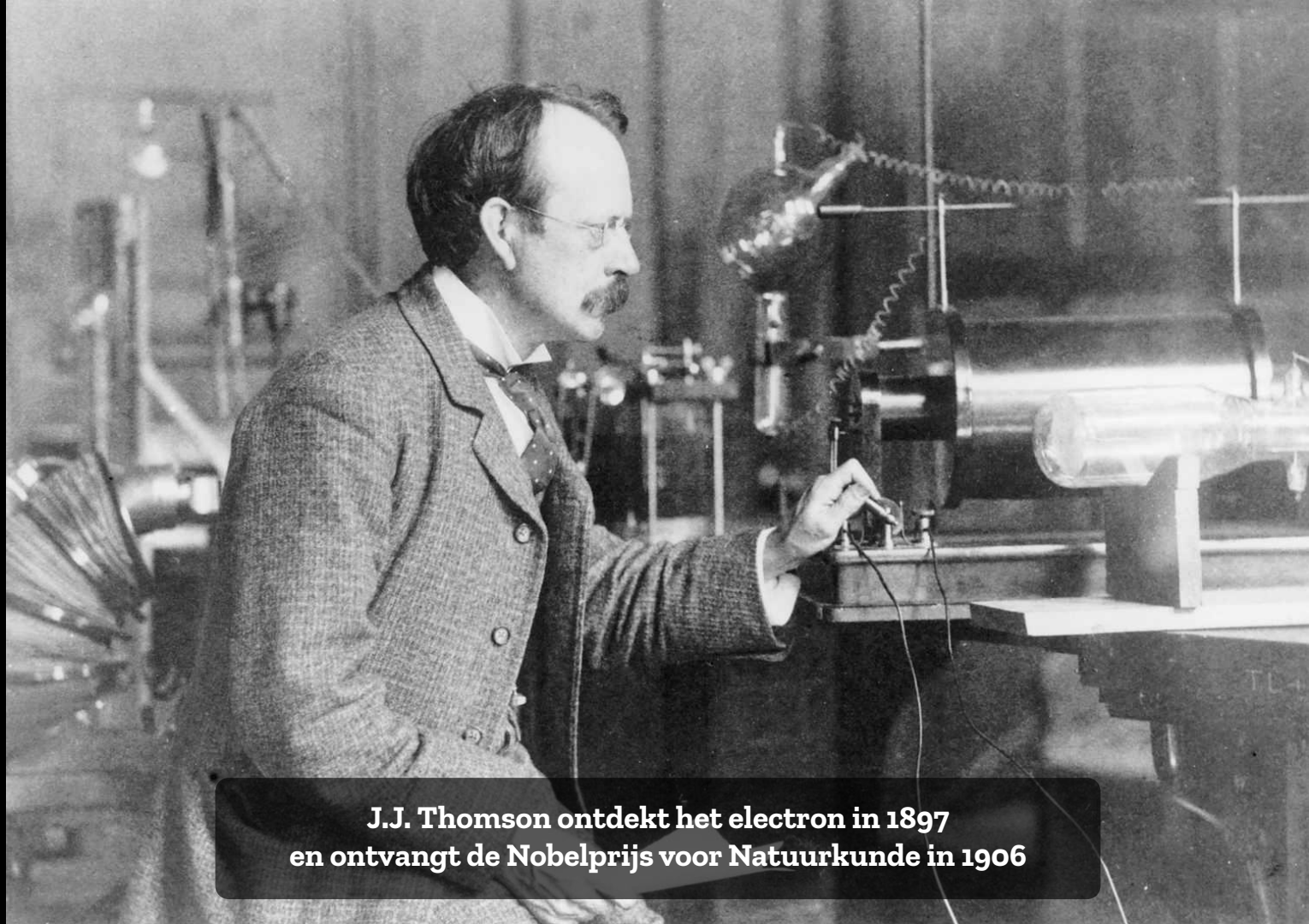
## Meer weten over AI?

- [Nationale AI cursus](#)
- [Elements of AI cursus](#)

# AI als nieuwe systeemtechnologie







**J.J. Thomson ontdekt het electron in 1897  
en ontvangt de Nobelprijs voor Natuurkunde in 1906**

# THE CURRENT WAR

## THE TALE OF AN EARLY TECH RIVALRY

# DC

### DIRECT CURRENT

The flow of electricity is in one direction only. The system operates at the same voltage level throughout and is not as efficient for high-voltage, long distance transmission.

Direct current runs through:



Battery-Powered Devices



Fuel and Solar Cells



Light Emitting Diodes

"[TESLA'S] IDEAS ARE SPLENDID, BUT THEY ARE UTTERLY IMPRACTICAL."

- THOMAS EDISON

# AC

### ALTERNATING CURRENT

Electric charge periodically reverses direction and is transmitted to customers by a transformer that could handle much higher voltages.

Alternating current runs through:



Car Motors



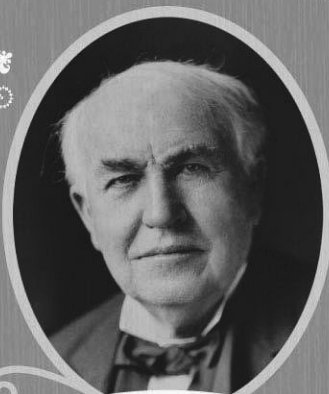
Radio Signals



Appliances

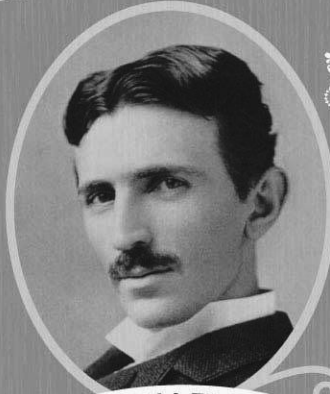
"IF EDISON HAD A NEEDLE TO FIND IN A HAYSTACK, HE WOULD PROCEED AT ONCE... UNTIL HE FOUND THE OBJECT OF HIS SEARCH. I WAS A SORRY WITNESS OF SUCH DOINGS, KNOWING THAT A LITTLE THEORY AND CALCULATION WOULD HAVE SAVED HIM 90 PERCENT OF HIS LABOR."

- NIKOLA TESLA



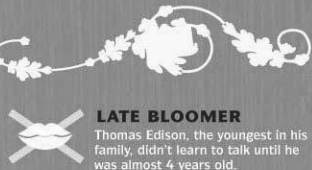
THOMAS EDISON

VS.



NIKOLA TESLA

You would have never found two geniuses so spiteful of each other beyond turn-of-the-century inventors Nikola Tesla and Thomas Edison. They worked together—and hated each other. Let's compare their life, achievements, and embittered battles.



### LATE BLOOMER

Thomas Edison, the youngest in his family, didn't learn to talk until he was almost 4 years old.

### FALLING OUT

Edison promised Tesla a generous reward if he could smooth out his direct current system. The young engineer took on the assignment and ended up saving Edison more than \$100,000 (millions of dollars by today's standards). When Tesla asked for his rightful compensation, Edison declined to pay him. Tesla resigned shortly after, and the elder inventor spent the rest of his life campaigning to discredit his counterpart.

"Genius is one percent inspiration, and ninety nine percent perspiration."

-Thomas Edison

1847 BORN 1858

Milan, Ohio BIRTHPLACE Smiljan, Croatia

Wizard of Menlo Park NICKNAME Wizard of the West

Home-schooled and self-taught EDUCATION Studied math, physics, and mechanics at The Polytechnic Institute at Graz

Mass communication and business FORTÉ Electromagnetism and electromechanical engineering

Trial and error METHOD Getting inspired and seeing the invention in his mind in detail before fully constructing it

DC (Direct Current) WAR OF CURRENTS: ELECTRICAL TRANSMISSION IDEA AC (Alternating Current)

Incandescent light bulb; phonograph; cement making technology; motion picture camera; DC motors and electric power

NOTABLE INVENTIONS 1,093 NUMBER OF US PATENTS

Tesla coil - resonant transformer circuit; radio transmitter; fluorescent light; AC motors and electric power generation system

0 NUMBER OF NOBEL PRIZES WON

1 NUMBER OF ELEPHANTS ELECTROCUTED



### WAR OF CURRENTS OFFICIALLY SETTLED

In 2007, Con Edison ended 125 years of direct current electricity service that began when Thomas Edison opened his power station in 1882. It changed to only provide alternating current.



### EDISON FRIES AN ELEPHANT

In order to prove the dangers of Tesla's alternating current, Thomas Edison staged a highly publicized electrocution of the three-ton elephant known as "Topsy." She died instantly after being shocked with a 6,600-volt AC charge.

1931—Passed away peacefully in his New Jersey home, surrounded by friends and family

### DEATH

1943—Died lonely and in debt in Room 3327 at the New Yorker Hotel

### NOBEL PRIZE CONTROVERSY



In 1915, both Edison and Tesla were to receive Nobel Prizes for their strides in physics, but ultimately, neither won. It is rumored to have been caused by their animosity towards each other and refusal to share the coveted award.

# Verschillende soorten algoritmes

Soort	Voorbeelden
<b>Tijdreeksen</b>	<ul style="list-style-type: none"><li>• Zo oud als de wereld, sinds 1800</li><li>• Weersvoorspellingen, economie, gezondheidszorg</li></ul>
<b>Logistiek</b>	<ul style="list-style-type: none"><li>• Met wiskunde de beste tactiek voor oorlogsvoering berekenen</li><li>• Optimaliseren van fabrieken</li></ul>
<b>Simulatie</b>	<ul style="list-style-type: none"><li>• Uitvinding van eerste computers</li><li>• Het 'ongeveer' oplossen van wiskundige vergelijkingen</li></ul>
<b>Als-dit-dan-dat</b>	<ul style="list-style-type: none"><li>• Sinds eind jaren 1970 in gebruik (mainframes, PC)</li><li>• Zogenaamde expert systemen, bijvoorbeeld bij banken</li></ul>
<b><u>Machine Learning</u></b>	<ul style="list-style-type: none"><li>• Algoritmes zijn al in jaren 1980 uitgevonden</li><li>• Pas sinds jaren 2000 echt in gebruik</li></ul>

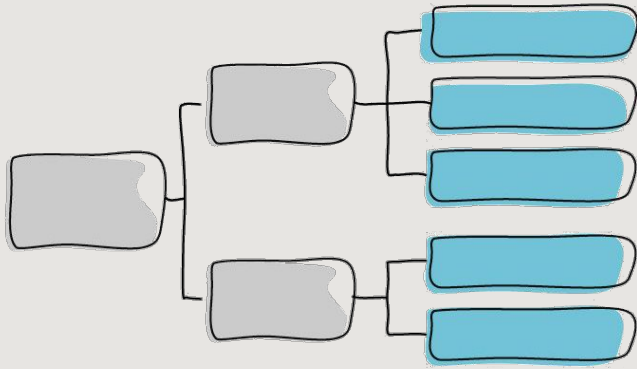
# Het verschil tussen als-dit-dan-dat en machine learning

## als-dit-dan-dat

mensen moeten  
beslisregels  
programmeren

## machine learning

de computer 'zoekt'  
naar beslisregels  
op basis van  
voorbeelden







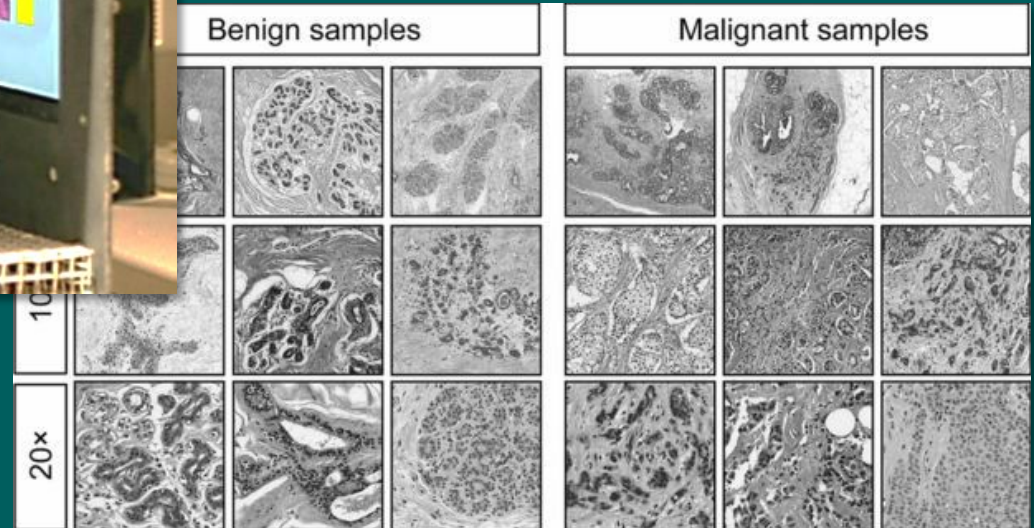
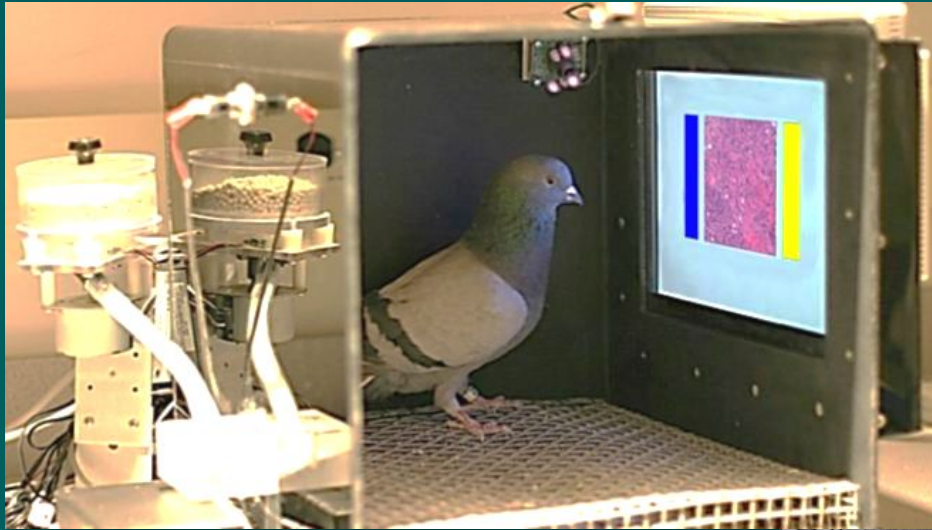


# Neural network activations



DNN Control

# Het is geen magie, duiven kunnen het ook ...




1998年12月15日



# ALPHAGO

A DOCUMENTARY • SPRING 2017



A first-person perspective from the driver's seat of a car at night. The dashboard is illuminated with a blue glow. The steering wheel is on the left, and a central infotainment screen is lit up. Through the windshield, a city street at night is visible with traffic lights and other vehicles. The BBC News logo is overlaid in the bottom left corner.

**BBC NEWS**



What would happen if  
the strings were cut?



The balloons would  
fly away.



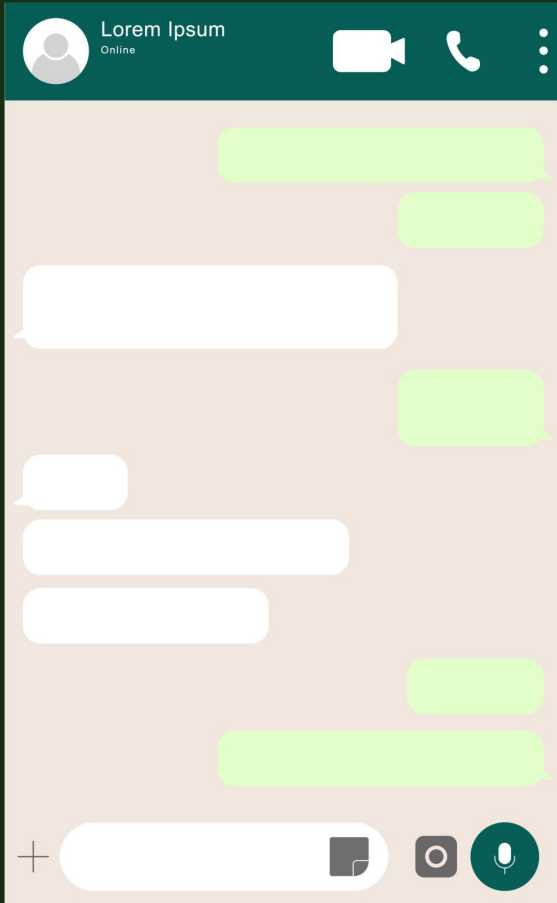
# Generative Large Language Multi-modal Models

Dus ChatGPT is een **Gollum\***

Afbeelding gemaakt met [Stable Diffusion](#)  
met instructie: *"a gollum in iconic style cute"*

\* meer weten over GLLMMs? [Deze video](#) van Tristan Harris and Aza Raskin is de moeite waard.





## Het principe: *next token prediction*

> “Morgen” *<next token>*

> “Vanaf morgen” *<next token>*

> “Zullen we morgen” *<next token>*

# Next token prediction

**Text:** Second Law of Robotics: A robot must obey the orders given it by human beings



**Generated training examples**

**Example #**

**Input (features)**

**Correct output (labels)**

1

Second law of robotics :

a

2

Second law of robotics : a

robot

3

Second law of robotics : a robot

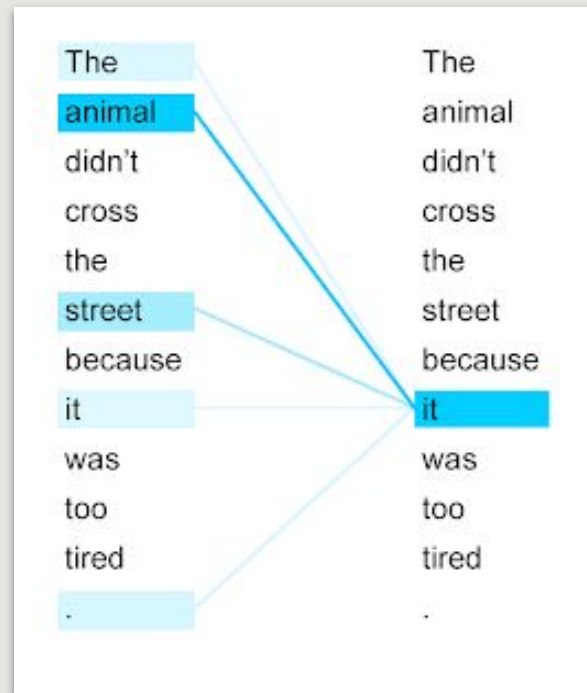
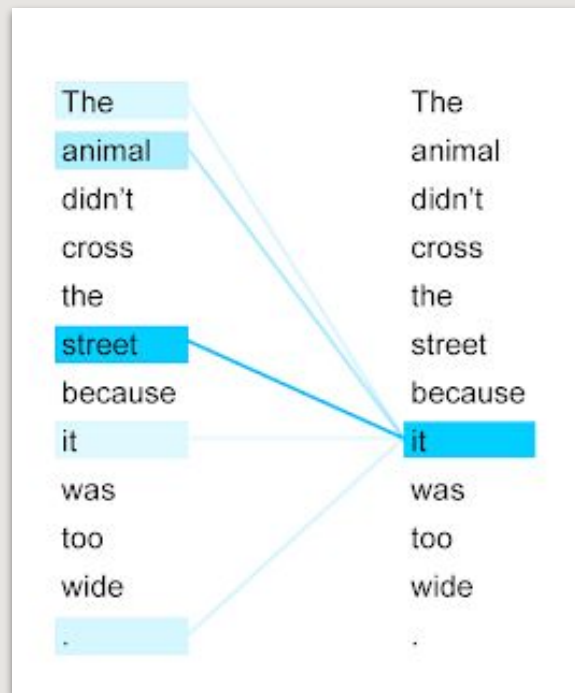
must

...

## Waarom computers moeite hebben met taal

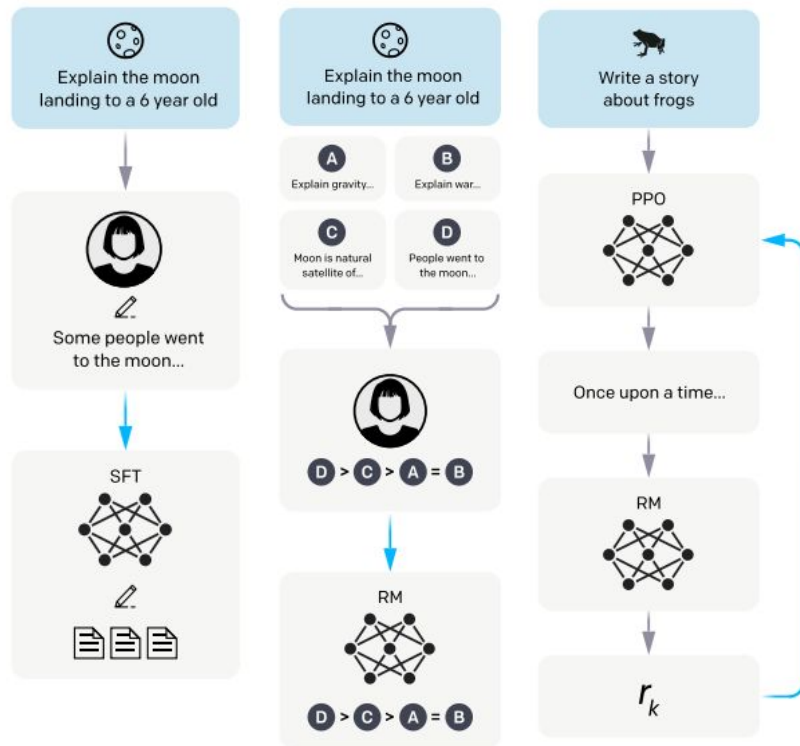
*“Kijk een Aziaat  
nooit recht in de ogen.  
Het is beleefder  
om ze neer te slaan.”*

## Met heel veel rekenkracht is dit nu opgelost



# Hoe ChatGPT er van binnen uitziet

Basis model voor  
voorspellen  
volgende woord



# road traffic law

what is the maximum amount of alcohol I can have in my blood when driving and what do I risk if I have more?

Vraag

📖 According to § 5b Abs. 2 StVO 1960, persons who drive or operate a vehicle must not be in a state impaired by alcohol or narcotics. The alcohol content of the blood may be 0.5 g/l (0.5 per thousand) or more and the alcohol content of the breath 0.25 mg/l or more. If you have more alcohol in your blood, you risk a fine of 300 euros to 3700 euros or a substitute prison sentence of up to six weeks, depending on the degree of intoxication and the frequency of the offences.

Antwoord op basis van  
bedrijfsinformatie

[StVO 1960 § 5b](#)

[FSG § 26](#)

[FSG § 37a](#)

[KFG 1967 § 98](#)

Referenties

What is your question about road traffic law?



# Is AI nu echt intelligent?

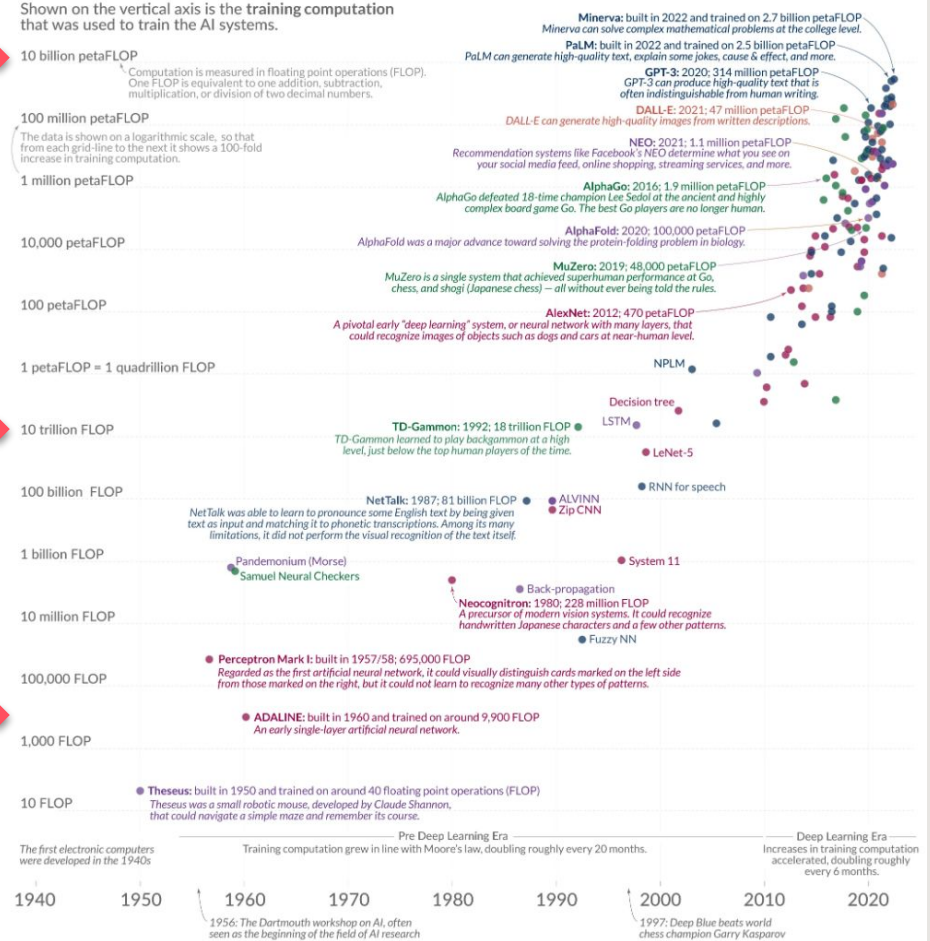
GLLMs:  
 $10^{24}$  berekeningen

moderne smartphone:  
 $10^{13}$  per seconde

Apollo 11  
 boordcomputer:  
 $10^5$  per seconde

## The rise of artificial intelligence over the last 8 decades: As training computation has increased, AI systems have become more powerful

The color indicates the domain of the AI system: ● Vision ● Games ● Drawing ● Language ● Other



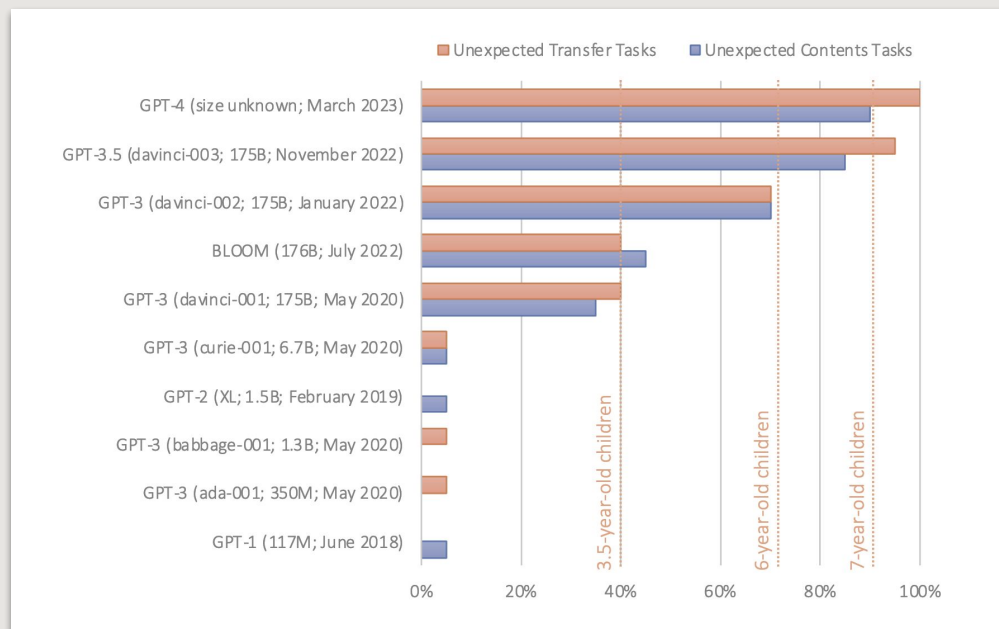


# De meningen zijn erg verdeeld

Het zijn papegaaien



Ze hebben de intelligentie van kinderen



# Wat is AI nu eigenlijk?



- OK “Intelligent” voor hele specifieke taken
- OK Gaat overal in zitten, een soort vervolg op automatisering en digitalisering
- OK Nu we tegen computers kunnen ‘praten’ wordt het veel makkelijker om AI te gebruiken
- OK Iedereen kan met AI werken



- ! AI is heel erg belastend voor het milieu
- ! De kwaliteit van AI moet nog veel beter om het voor hoog-risico toepassingen te gebruiken
- ! We moeten nadenken hoe we data willen delen voor de ontwikkeling van AI
- ! De macht over AI is in handen van slechts een paar grote bedrijven

# Dank voor uw aandacht.

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FREE SPEECH  
OPEN PLATFORM  
EVERYBODY IS WELCOME  
IN OUR  
DISCUSSIONS