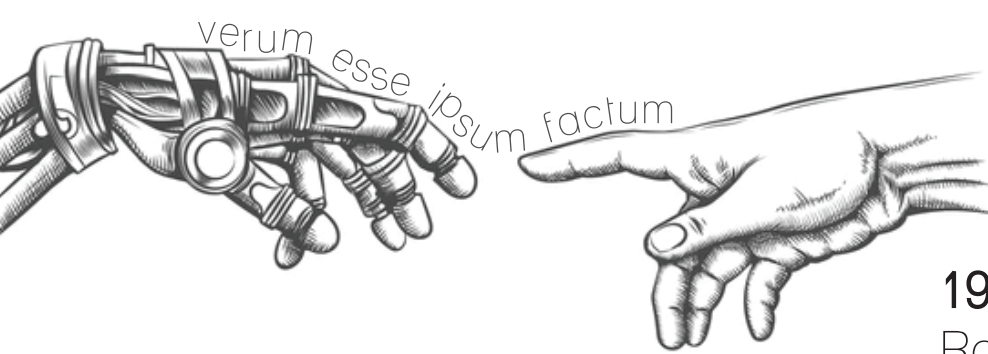


# A brief history of Artificial Intelligence

mostly complete  
starting around the cybernetics movement

## From cybernetics to AI

The idea that humans and machines are essentially the same gives rise to a project where scientists began to seriously consider what it would take to develop machines with human-like intelligence.



The "birth of AI" in the wake of the cybernetics movement  
Bringing together the functioning of machines and organic beings



1942: Accelerated code breaking  
Alan Turing used the Bombe machine to decode messages encrypted using the Enigma machine at an accelerated pace during WWII

1949: "The Manchester Baby" runs its first program

## 1940's

1948: "Cybernetics"  
the study of control and communication in the animal and the machine  
by Norbert Wiener

1948: Mark 1 Prototype  
The first stored program computer also known as the "Manchester Baby"  
A proof of concept to test the first electronic random-access memory (RAM) device  
Built by Tom Kilburn & Freddie Williams

1949: "Giant Brains: Or Machines That Think"  
Edmund Berkeley compares machines to human brains if it were made of "hardware and wire instead of flesh and nerves."

1943: Machines and behavior  
"Behavior, Purpose, and Teleology"  
by Rosenblueth, Wiener, & Bigelow

1943: "Artificial Neurons"  
A Logical Calculus of the Ideas Immanent in Nervous Activity  
by McCulloch & Pitts

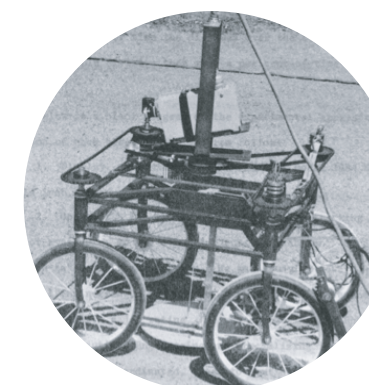
## The birth of neural networks



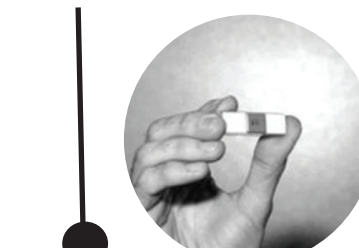
"The construction of computer programs that engage in tasks that are currently more satisfactorily performed by human beings because they require high-level mental processes such as: perceptual learning, memory organization and critical reasoning."  
- Marvin Minsky

## "Artificial Intelligence"

Introduced into the nomenclature by John McCarthy



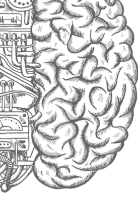
1961: "The Stanford Cart"  
first autonomous vehicle  
created by James Adams



1968: Artist Vera Molnar uses punch card instructions to create digital art using the Fortran program- the first "dehumanized art"

## 1950's

1952: Program that can play Checkers is developed by Arthur Samuel\*

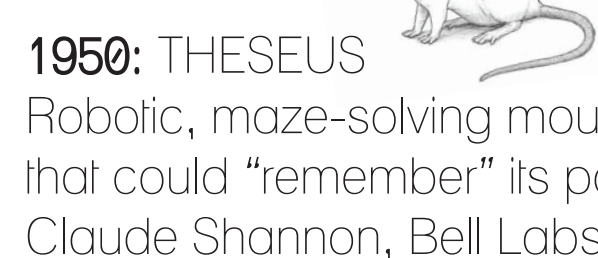


1955:

processing program that controlled a block world using English language instructions created by Terry Winograd



1950: The Imitation Game  
Computing Machinery and Intelligence  
by Alan Turing



1950: THESEUS  
Robotic, maze-solving mouse that could "remember" its path.  
Claude Shannon, Bell Labs

1949: Louis Fine begins building "RAYDAC," a digital automatic computer. Completed in 1953



1955: First AI Workshop Proposed to be held at Dartmouth in 1956  
McCarthy, Minsky, Rochester, Shannon



1957: The term "Computer Science" was coined by Louis Fein

1958: Mechanisation of Thought Processes  
The 1st International Symposium on Artificial Intelligence held in England.



1956: "AI will beat a human at chess within the next 10 years"  
-Herbert Simon



1963: RAND  
First tablet and stylus created  
RAND Corporation

1964: STUDENT  
Lisp-based program that solved algebra word problems  
Created by Daniel Bobrow

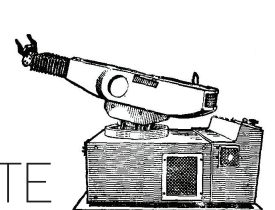
1964: ELIZA Chatbot  
Natural Language Processing  
Created by Weizenbaum

1957: The Perceptron learns to identify shapes; an early form of machine learning  
Created by Frank Rosenblatt

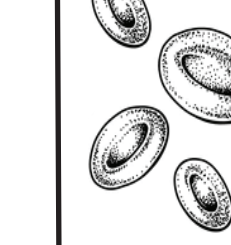
1958: LISP (List Processing)  
First Programming Language  
Created by: John McCarthy

## 1960's

1961: UNIMATE  
First Industrial Robotic arm available commercially  
Created by George Devol



1972: MYCIN  
Expert System: Blood Disease Diagnosis with a 65% accuracy Rate  
- Newell Simon

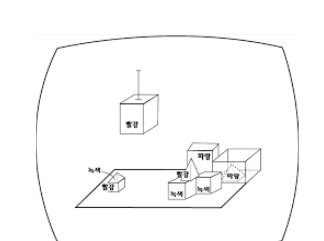


1964: Facial Recognition  
Used "landmarking" techniques to identify facial features  
Created by Bledsoe, Wold, & Bisson

1956: The first AI program  
Logic Theorist - prove theorems in symbolic logic from Whitehead and Russell's Principia Mathematica  
Created by Newell & Simon

1957: General Problem Solver  
Means-End Problem Solving  
Newell, Simon, & Shaw

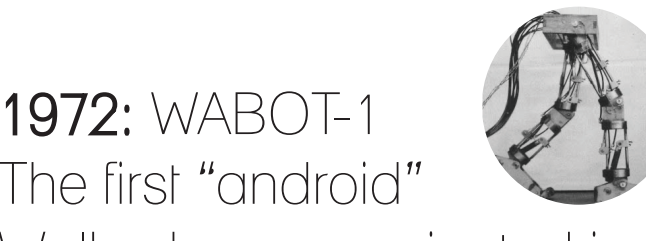
1961: SAINT (Symbolic Automatic INtegrator)  
heuristic problem-solving program for symbolic integration in calculus  
Created by James Slagle



1968: SHRDLU  
Natural language processing program that controlled a block world using English language instructions created by Terry Winograd

## AI Boom

1972: WABOT-1  
The first "android"  
Walked, communicated in Japanese and gripped objects  
Waseda University



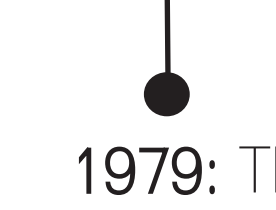
1976: Physical Symbol System Hypothesis  
"Computer science as empirical inquiry Symbols and Search"  
by Newell & Simon

1973: Reduced funding for AI due to lack of promised progress in Britain

1979: Gammanoid beats champion at back-gammon  
Created by: Hans Berliner

## 1970's

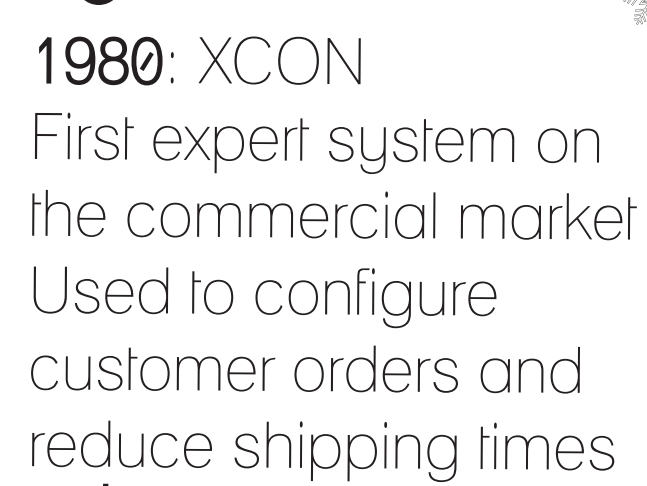
1979: The Stanford Cart  
successfully navigates a room without human assistance



1984: "Winter is Coming"  
-Schank & Minsky



1980: XCON  
First expert system on the commercial market  
Used to configure customer orders and reduce shipping times



1975: SAM  
Program meant to "understand" stories run on scripts  
Created by Roger Schank

1968: The concept now known as "deep learning" is first introduced by Alexey Ivakhnenko in "Group method of data handling"

1971: AARON  
Autonomous Drawing Program creates the first "AI Art" - paints a "turtle"  
Designed by Harold Cohen



1974-1980  
1st AI Winter  
Perceptions failed to live up to expectations  
Discoveries made failed to make the promised impact



1987-1994  
Expert Systems AI Winter  
Limitations of if-then reasoning apparent  
Expert systems based on if-then reasoning failed because software was hard to maintain and couldn't handle novel information



1971: Microprocessor Invented by Ted Hoff  
Ushering in the "Golden Age" of Expert Systems  
Hoff received the national medal of technology & innovation in 2010



1987: VPL Data Glove  
A VR glove that controlled a virtual hand

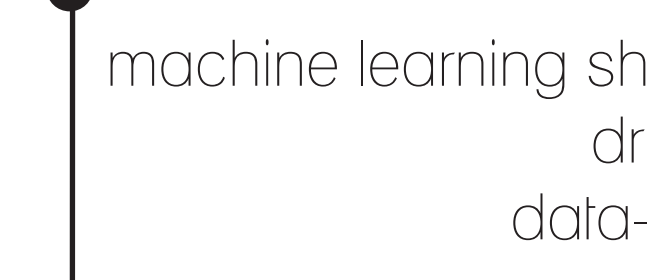
1989: CYBERFACE  
VR glasses created  
LeapVR



1980: 1st National Conference on Artificial Intelligence  
Held at Stanford University, August 18-21

1981: 5th Generation Computer Project  
Japan spends \$850 million to create computers that could translate and use human language + express human-level reasoning

1988: Eigenface  
Linear Algebra is used to advance facial recognition programs  
Sirovich & Kirby

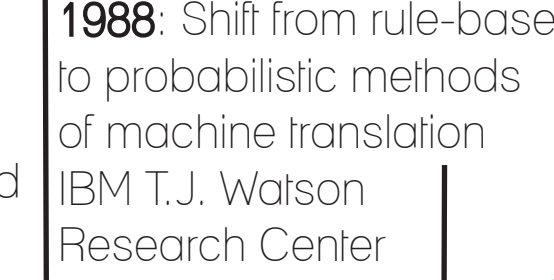


1988: Shift from rule-based to probabilistic methods of machine translation  
IBM T.J. Watson Research Center

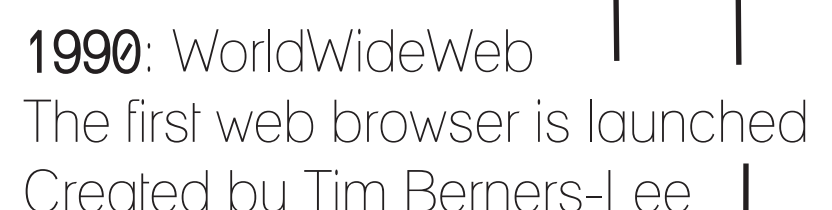


1989: The "web" is invented by Tim Berners-Lee

1985: RBX5  
Using self-learning software the robot would advance from simple responses to making predictions about the future from past events  
RB Robot Corporation



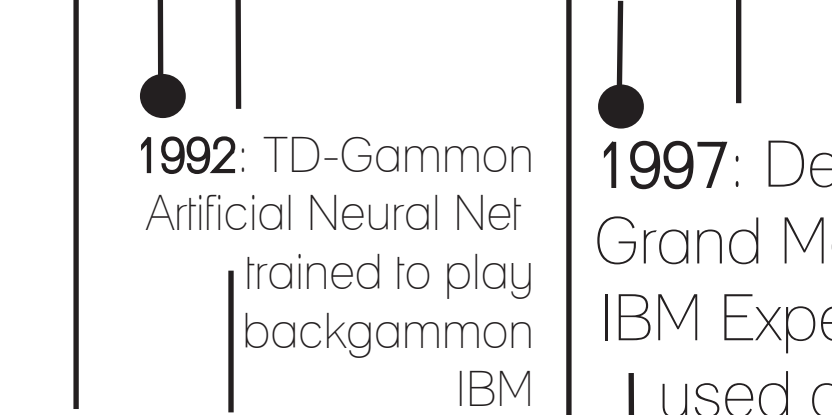
1990: WorldWideWeb  
The first web browser is launched  
Created by Tim Berners-Lee



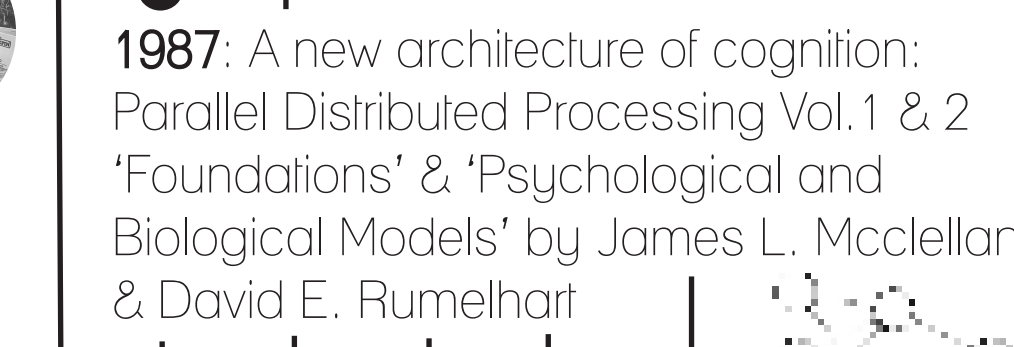
1997: Speech Recognition Software



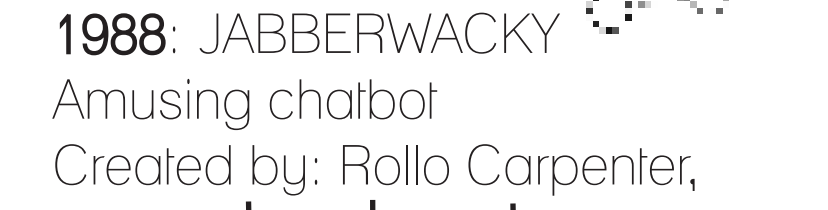
1992: TD-Gammon  
Artificial Neural Net trained to play backgammon  
IBM



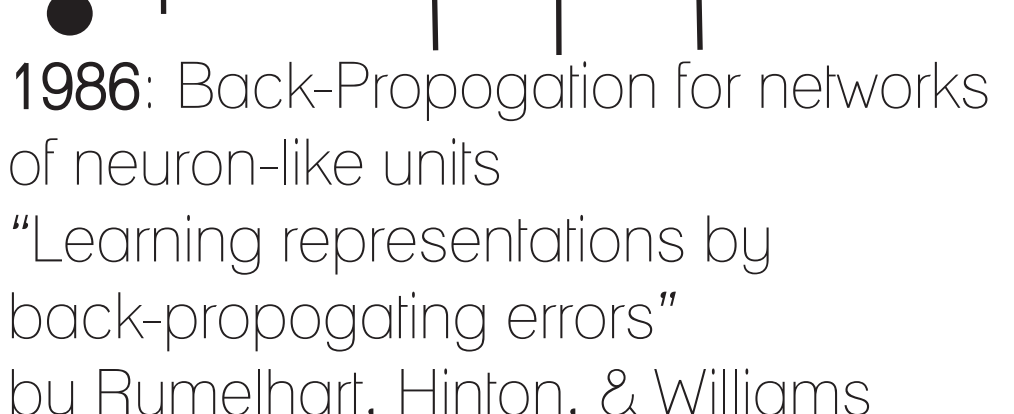
1987: A new architecture of cognition: Parallel Distributed Processing Vol.1 & 2  
'Foundations' & 'Psychological and Biological Models' by James L. McClelland & David E. Rumelhart



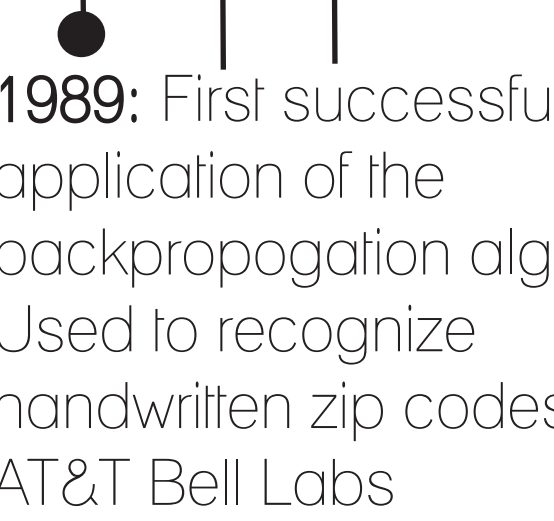
1988: JABBERWACKY  
Amusing chatbot  
Created by: Rollo Carpenter,



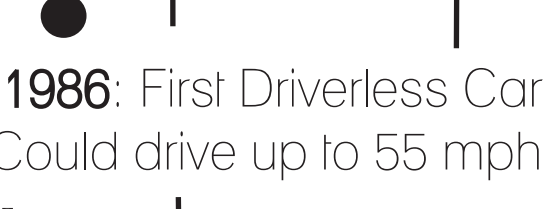
1986: Back-Propogation for networks of neuron-like units  
"Learning representations by back-propogating errors"  
by Rumelhart, Hinton, & Williams



1989: First successful application of the backpropagation algorithm  
Used to recognize handwritten zip codes  
AT&T Bell Labs



1986: First Driverless Car  
Could drive up to 55 mph  
Mercedes-Benz



1990: "AUGMENTED REALITY"  
Introduced into the nomenclature by Tom Caudell



1987: Market for specialized LISP-based hardware collapses  
Low consumer, public, and private interest in AI

## "Deep Learning"

coined by Geoffrey Hinton to explain new algorithms that can be trained to recognize objects and text in images and videos

1997: LSTM  
FNN used for handwriting and speech recognition  
Created by Hochreiter & Schmidhuber



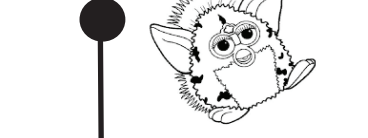
1995: A.L.I.C.E.  
First chatbot that also collected data



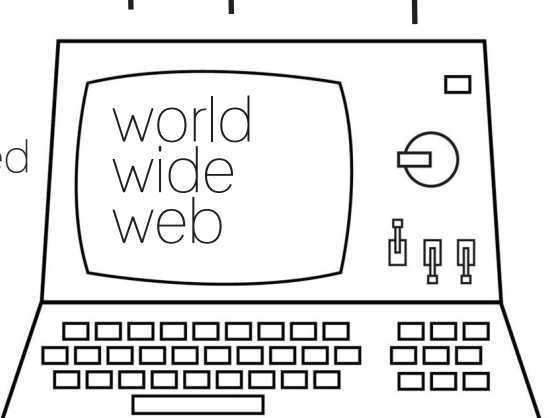
1997: Six Degrees  
First social media platform



1998: FURBY  
First pet robot  
By Caleb Chung



1994: GPU  
3D graphics introduced with the Play Station 1 home gaming console

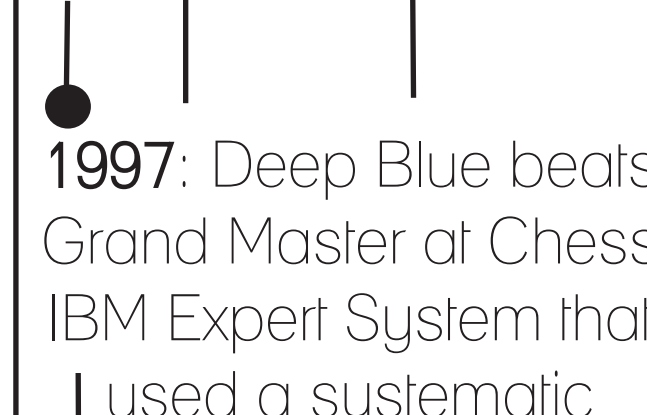


## Internet Boom

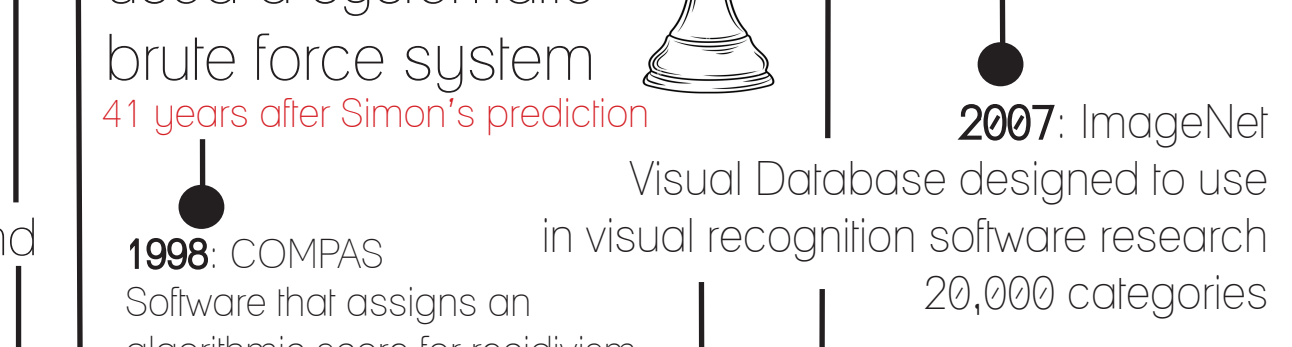
1997: Speech Recognition Software



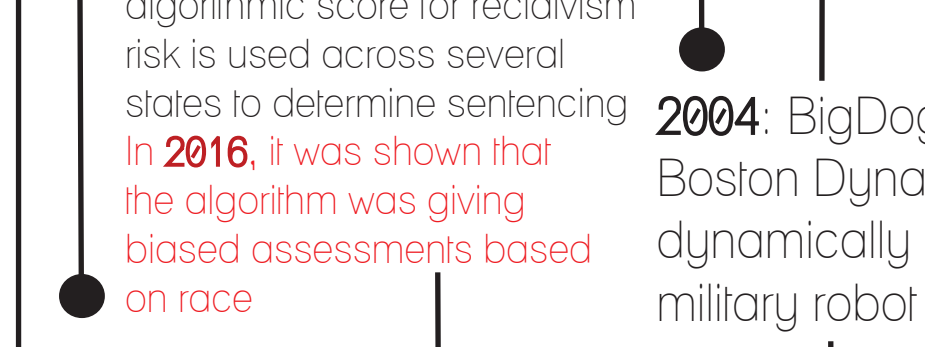
1997: Deep Blue beats Grand Master at Chess  
IBM Expert System that used a systematic brute force system  
41 years after Simon's prediction



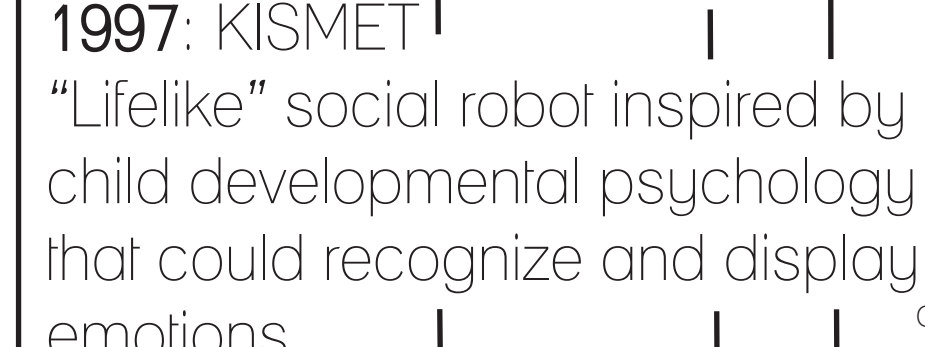
1998: COMPAS  
Software that assigns an algorithmic score for recidivism risk is used across several states to determine sentencing  
In 2016, it was shown that the algorithm was giving biased assessments based on race



1997: KISMET  
"Lifelike" social robot inspired by child developmental psychology that could recognize and display emotions



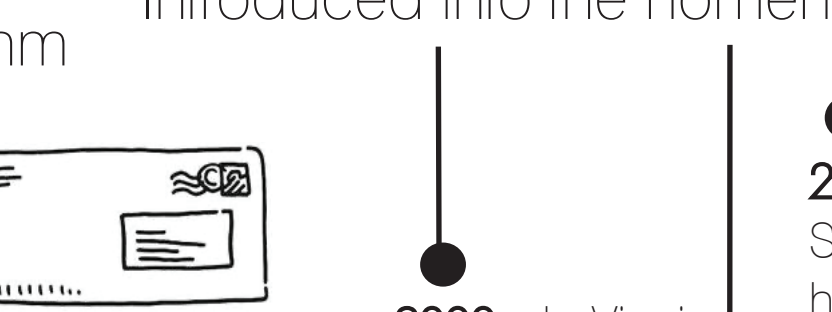
2004: BigDog  
Boston Dynamics creates dynamically stable quadruped military robot



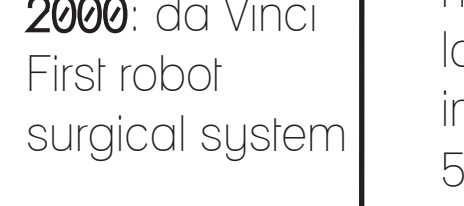
2010: "AlexNet"  
Convolutional Neural Network achieves 15.3% error rate with image recognition using deep learning  
In 2015 it was discovered that the AI mislabels images featuring people with dark skin as "Gorilla"  
As a solution, Google+ removes the Gorilla label entirely. As of 2023, the label is still removed from the database



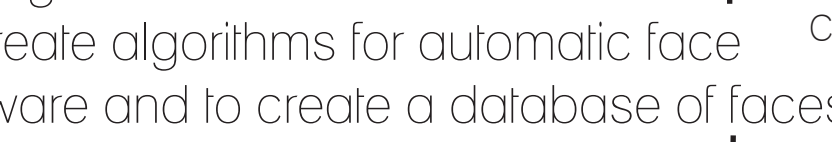
2005: Mechanical Turk  
Service that recruited humans to hand label over 3 million images across 5k categories for computer vision tasks



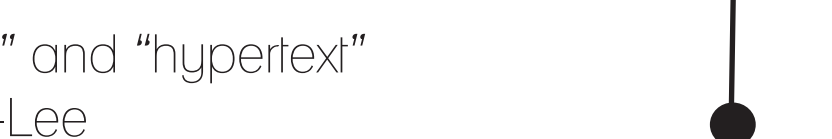
2000: da Vinci  
First robot surgical system



1993: FERET Program  
Developed to create algorithms for automatic face recognition software and to create a database of faces



1989: The terms "Hyperlink" and "hypertext" are coined by Tim Berners-Lee

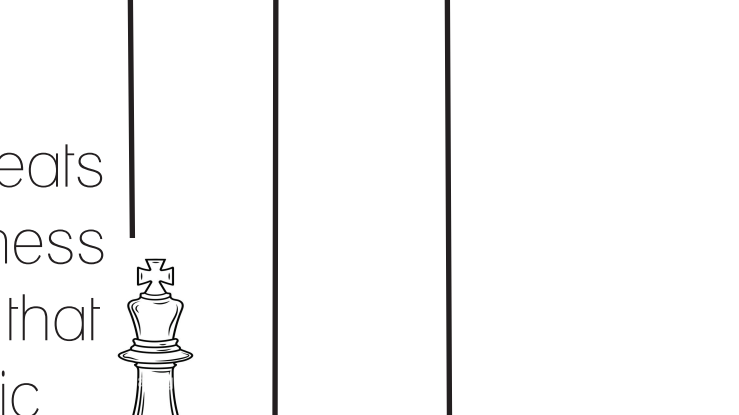


2004: STANLEY  
first autonomous vehicle to win the Defense Advanced Research Projects Agency's 'Grand Challenge' by successfully navigating a 132-mile course in the Mojave Desert on it's own  
Stanford AI Lab

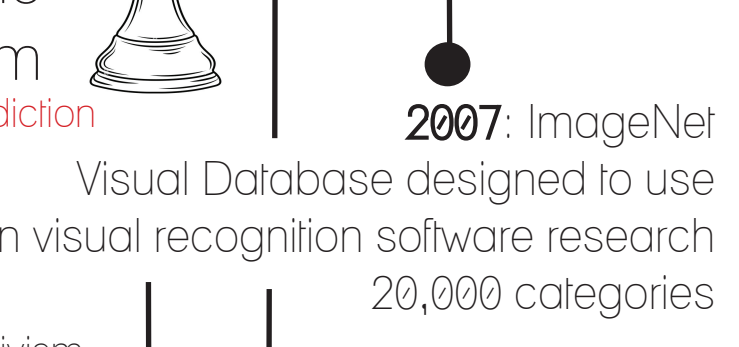


## 2000's

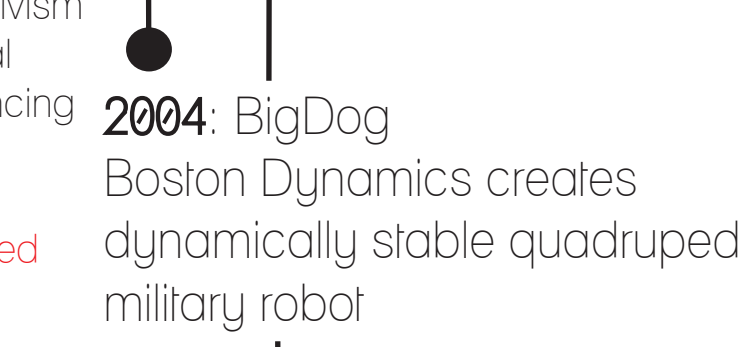
2007: ImageNet  
Visual Database designed to use in visual recognition software research  
20,000 categories



2011: WildCat  
Boston Dynamics creates the fastest quadruped robot on Earth



2016: SOPHIA  
Humanoid Robot becomes the first "robot citizen"  
Created by David Hanson Jr.



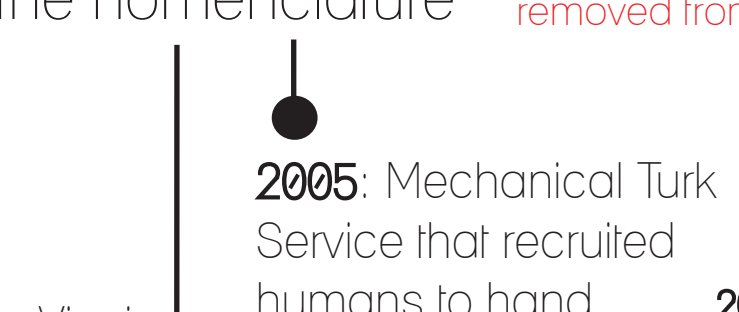
2018: Language processing AI beats human intellect on a Stanford reading and comprehension test for the first time  
Created by e-commerce giant Alibaba



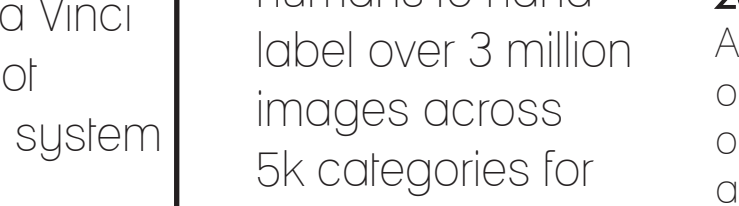
2018: Generative Pre-trained Transformer 1 (GPT-1)  
was the first of OpenAI's large language models following Google's invention of the transformer architecture in 2017. Introduced the concept of a pre-trained transformer.



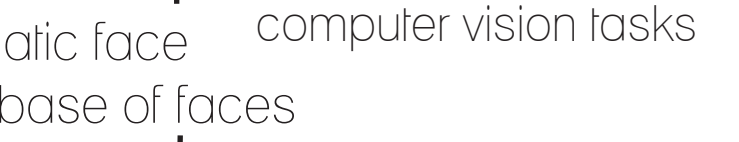
2016: The Next Rembrandt  
Deep learning algorithm creates realistic portrait style painting using 3D printing



2015: SWARM AI  
A real-time online tool that makes predictions based on converging information from various sources within a network predicted the winning horse at the Kentucky Derby Unanimous AI



2017: Dialog Agents  
Chatbots programmed in English and designed to negotiate with each other invented their own language  
Facebook AI Research Lab



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Access to massive volumes of data made training systems on image classification and recognition possible



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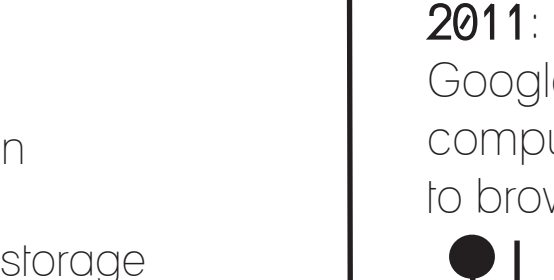


## The Rise Of DEEP LEARNING:

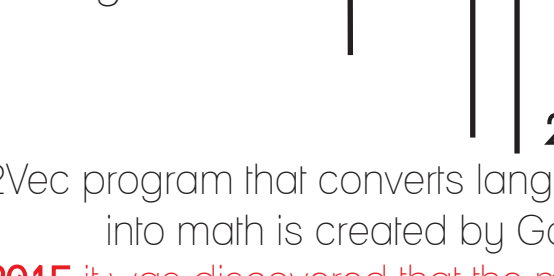
2010: XBOX 360 Kinect  
First gaming hardware to track body movements and translate it into gaming directions



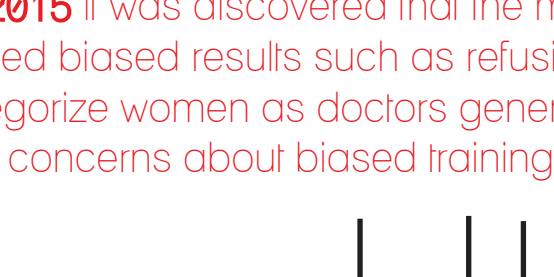
2011: Video Recognition  
Google X uses a neural network of 16,000 computer processors with 1 billion connections to browse YouTube. The AI identifies cats as a common image.



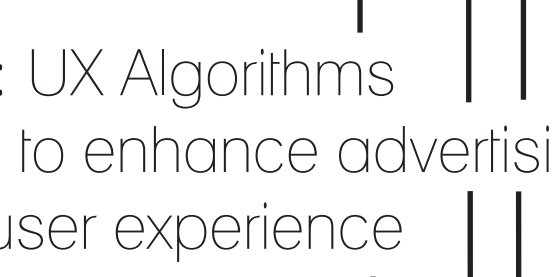
2013: Word2Vec program that converts language into math is created by Google  
In 2015 it was discovered that the model produced biased results such as refusing to categorize women as doctors generating concerns about biased training data



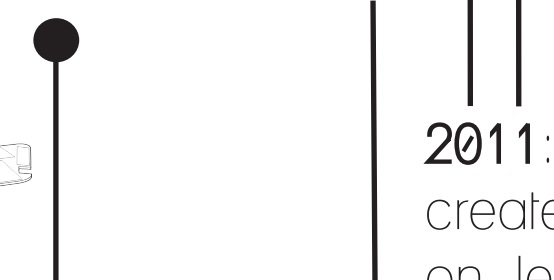
2017: UX Algorithms  
Used to enhance advertising and user experience



2011: WATSON  
created & wins on Jeopardy!



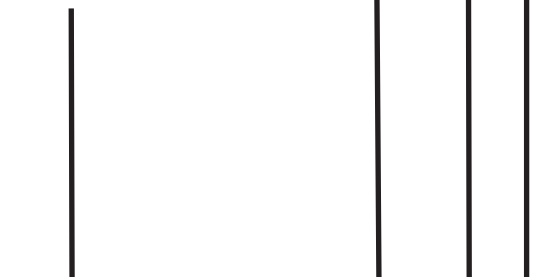
2013: Atlas  
First iteration of the humanoid robot is created for search and rescue tasks  
Boston Dynamics



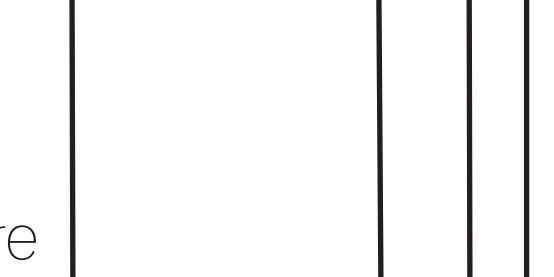
2017: AlphaGo Zero  
beats AlphaGo using a self-training model



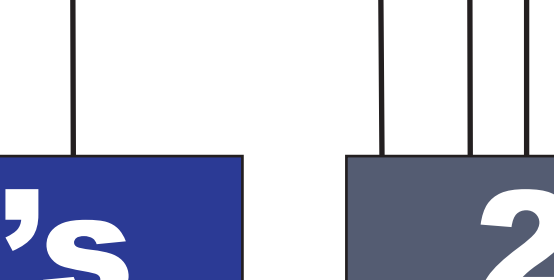
2019: AlphaStar  
Beats Grandmaster at StarCraft2



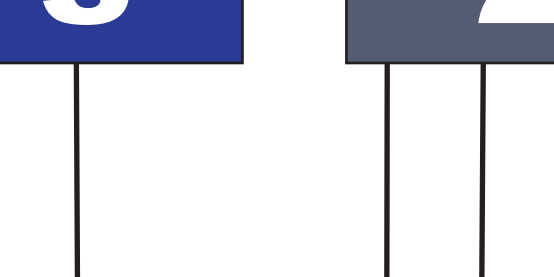
2018: BERT  
First bidirectional unsupervised learning model for natural language tasks  
Created by GOOGLE



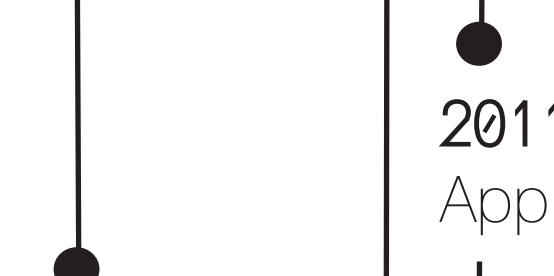
2021: DALL-E  
OpenAI's diffusion model generative AI that can process images to create accurate captions



2022: Is LaMDA Sentient?  
Blake Lemoine ignites the AI consciousness debate



2025: Agentic AI  
Artificial intelligence focused on autonomous decision-making and action.



## 2010's

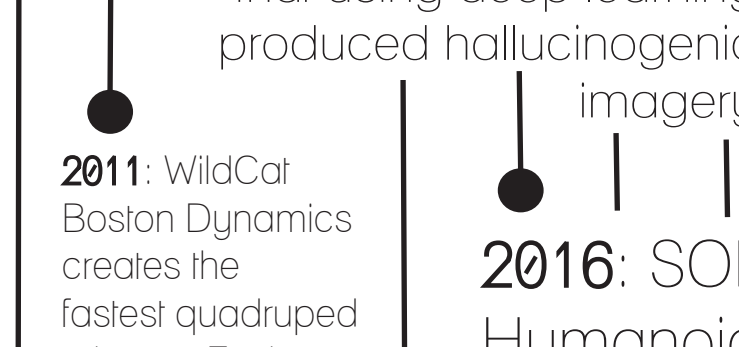
2011: SIRI  
Apple releases virtual assistant



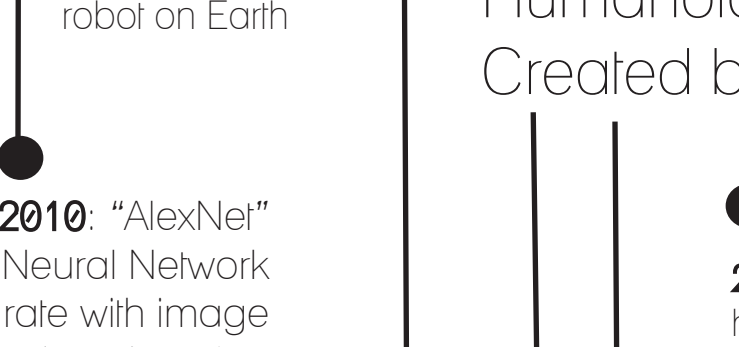
2015: DeepDream  
Convolutional Neural Net that using deep learning produced hallucinogenic imagery



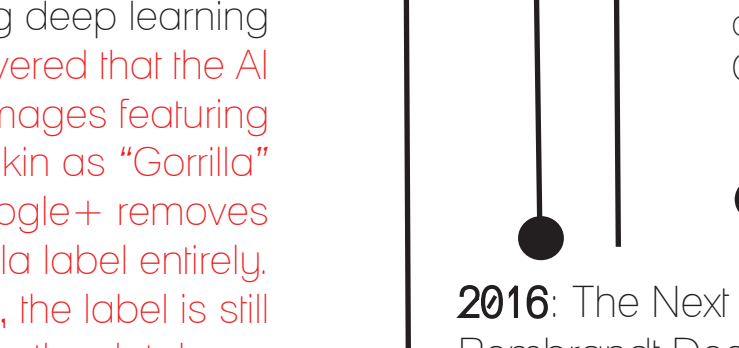
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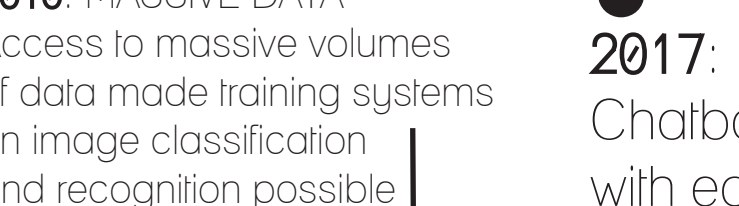
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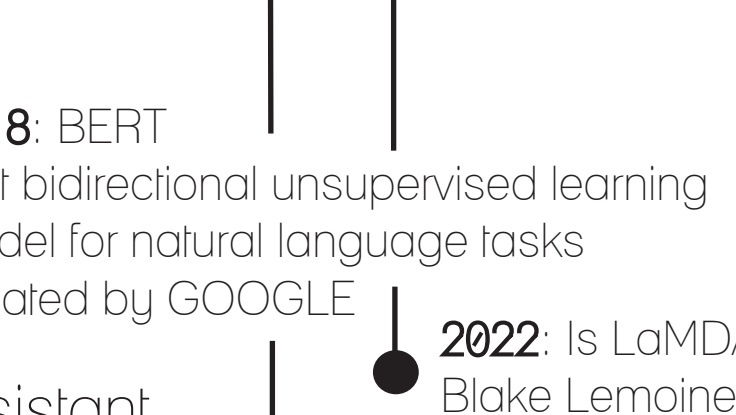


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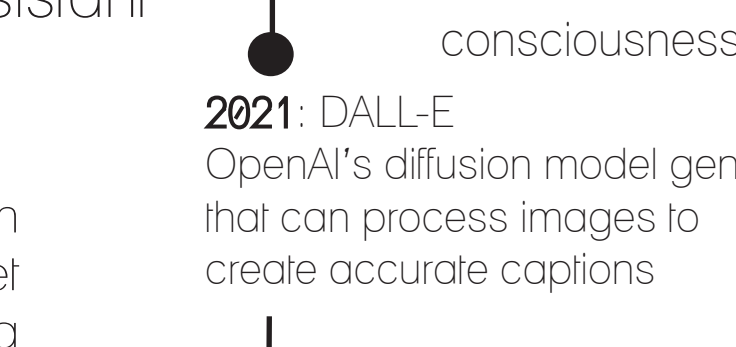


## 2020's

2020: GPT-3  
Uses deep learning to create code, poetry, and other language writing tasks.  
OpenAI



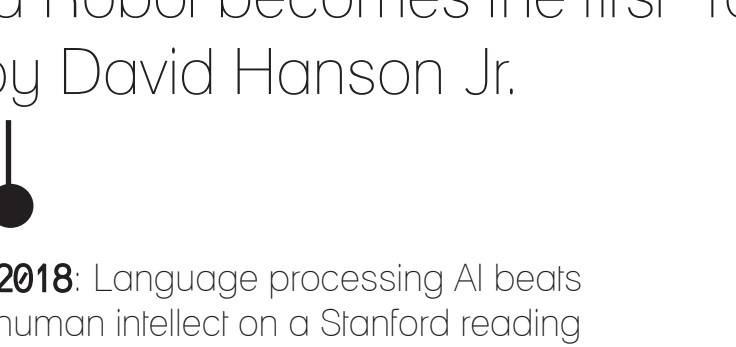
2020: AlphaFold  
OpenAI's deep learning system identifies three-dimensional structures of proteins



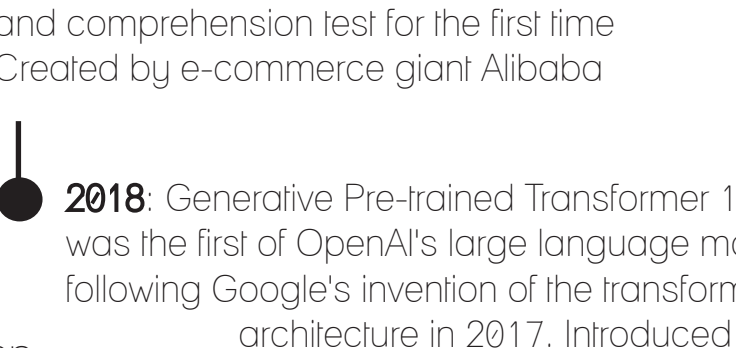
2021: GPT-3 introduced: massive scale-up, (175 billion parameters)



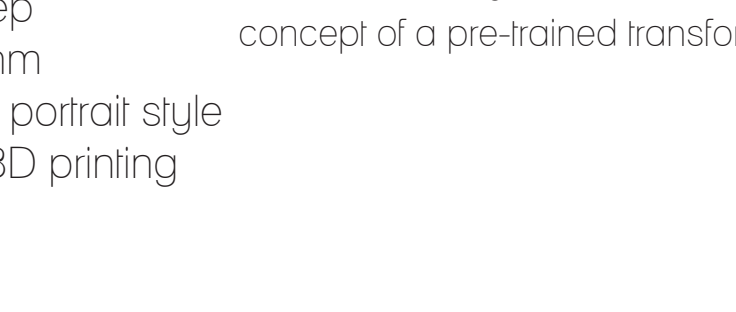
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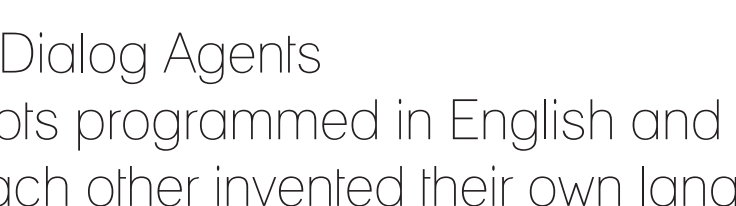
2021: GPT-3 introduced: massive scale-up, (175 billion parameters)



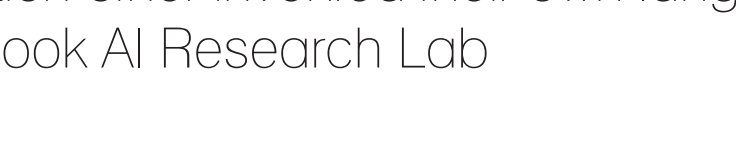
2021: GPT-3 introduced: massive scale-up, (175 billion parameters)



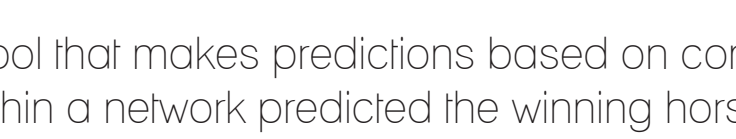
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