



The AI Paradox



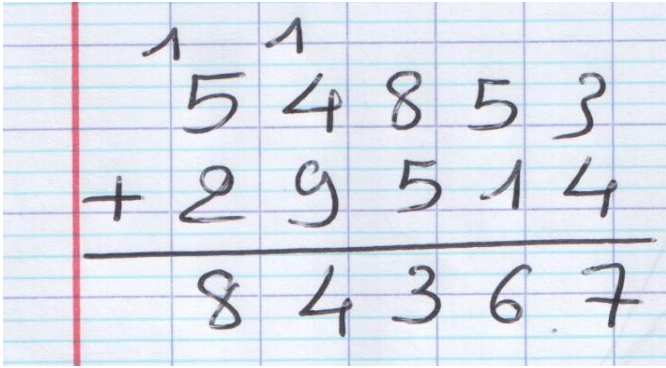
The background of the entire slide is a black field filled with vertical columns of green, blurred digital code, resembling a computer terminal or data stream.

What is AI?

Why Now?

What Now?

What is AI?



A handwritten addition problem on blue graph paper. The numbers are written in black ink. The first number is 54853, with a small '1' above the '5' and another '1' above the '4'. The second number is 29514, with a '+' sign to its left. A horizontal line is drawn below the numbers, and the sum 84367 is written below the line.

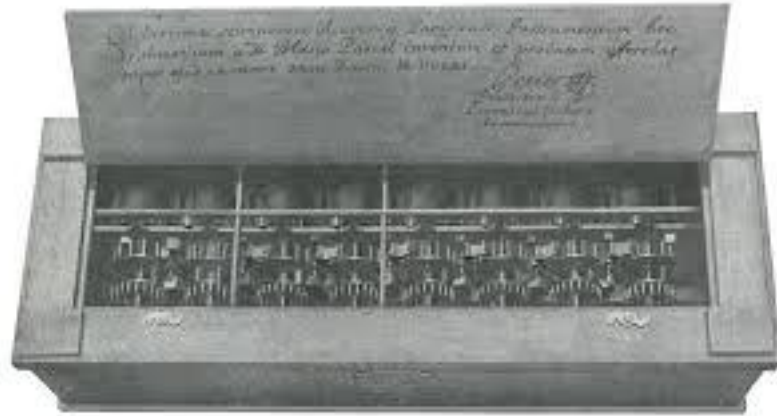
$$\begin{array}{r} 1 \quad 1 \\ 54853 \\ + 29514 \\ \hline 84367 \end{array}$$



Algorithmi

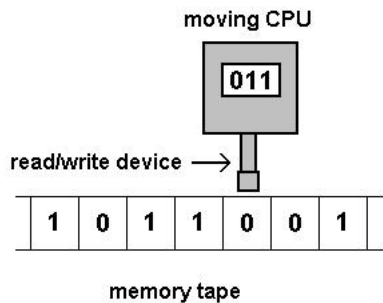
AI is the ability of a **human** to solve a problem that only **mathematicians** thought they could solve

What is AI?



AI is the ability of a ***machine*** to solve a problem that only humans thought they could solve

The Universal Machine



AI is the ability of an ***algorithm*** to solve a problem that only humans thought they could solve

AI is a Prowess of Algorithms



Deep Blue: 1997

Jeopardy: 2011



Rembrandt: 2016

Go: 2017

The background of the entire slide is a black field filled with vertical columns of green, blurred digital code, resembling a computer terminal or data stream.

What is AI?

Why Now?

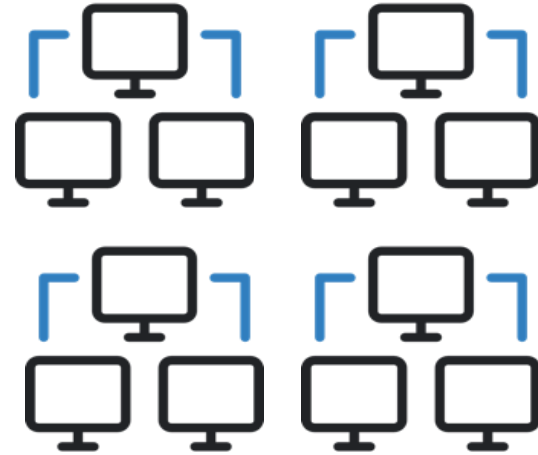
What Now?

Why Now?

Algorithms can:

- (a) network
- (b) learn
- (c) create

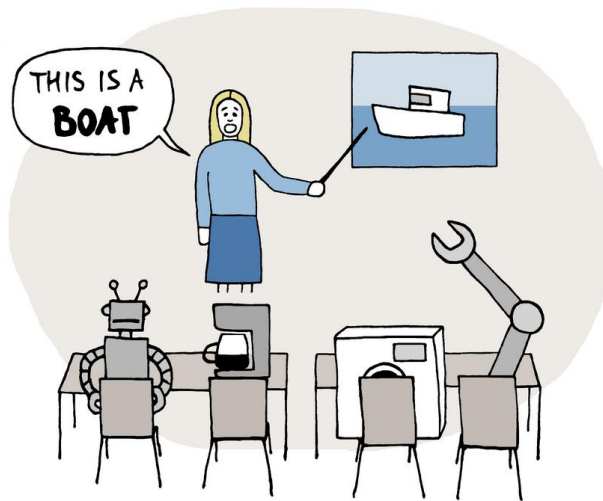
Algorithms that Network



Parallel and distributed

Algorithms that Learn

MACHINE LEARNING



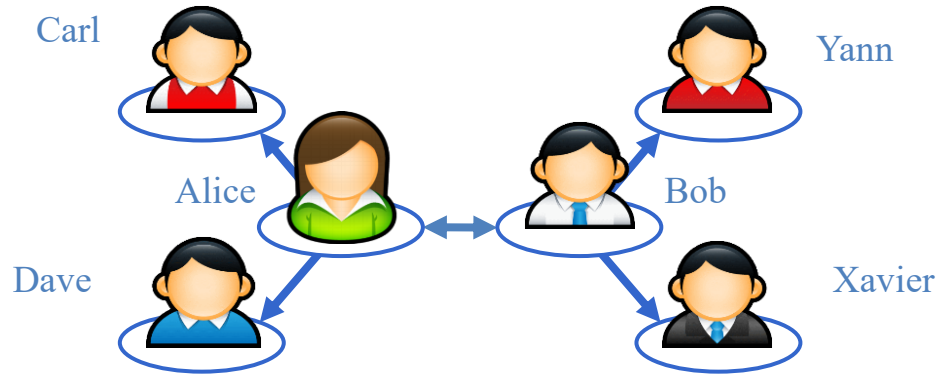
Dataedo /cartoon

Pro@Dataedo

From data and mistakes

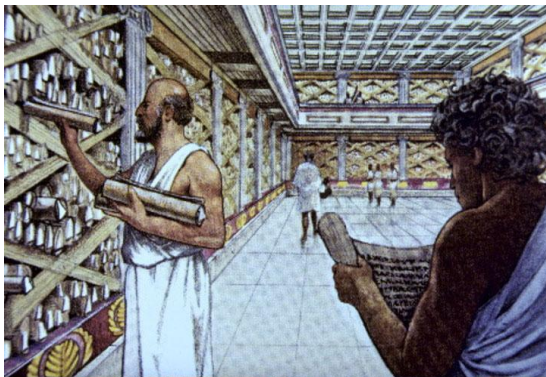
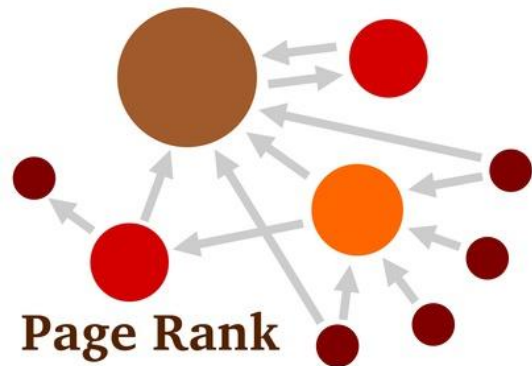
Collaborative Filtering

Each user has a profile



Learning from neighbors

Algorithms that Create



The background of the entire slide is a black field filled with vertical columns of green, blurred digital code, resembling a computer terminal or data stream.

What is AI?

Why Now?

What Now?

FROM CIRCUS ANIMALS TO PETS





The AI Paradox

AI In the media: Internet, finance,
healthcare, logistics, law,
education, manufacturing, consulting ...

AI in the real world: 80% of new AI projects fail



The AI Paradox

AI is faster and makes fewer mistakes than humans

But AI makes faster and bigger mistakes

What Now?



Try but beware

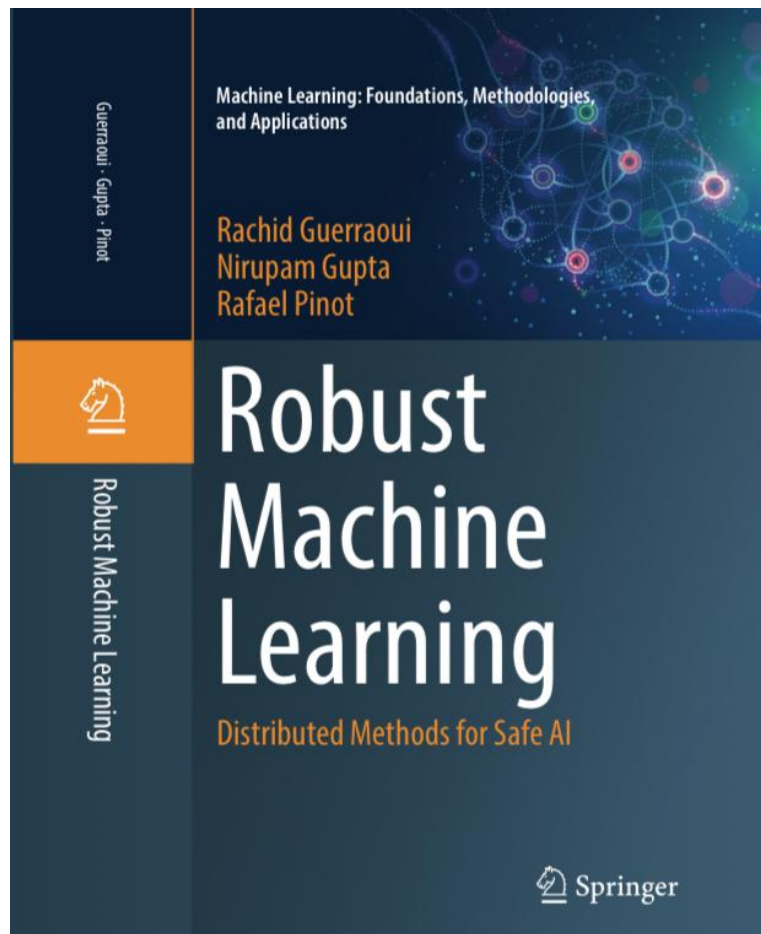


Can AI Verify AI?

Theorem (Turing36): algorithms cannot solve all problems (halting, printing, satisfactoriness...)

Efficiency + Privacy + Robustness

Theorem (AGS23): private, robust and efficient machine learning is hard



Anyway

Safe / Secure / Scalable