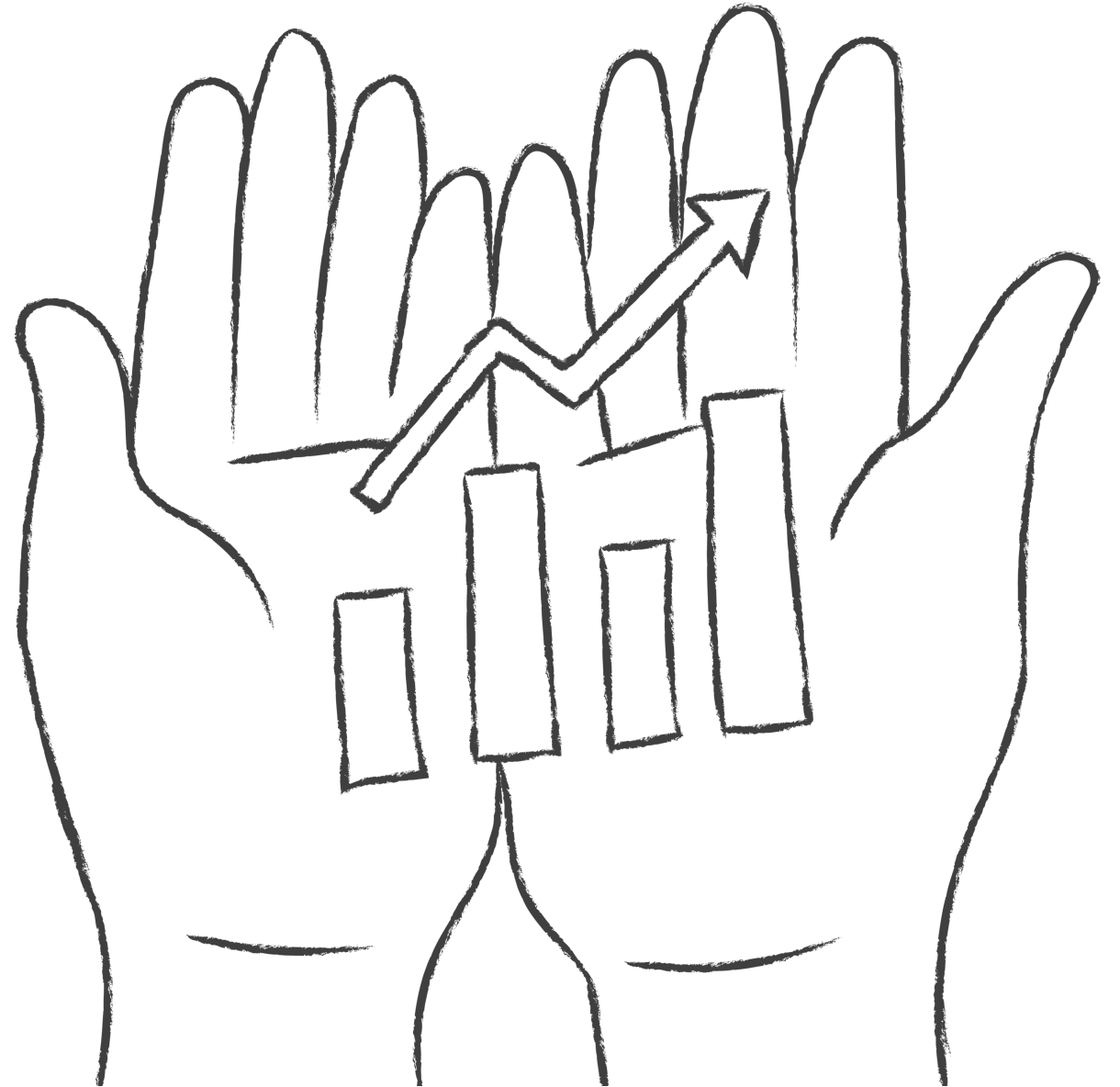


Artificial Intelligence

Rachel Warnock

plus a few robot friends

05.04.2023



Today

schedule	start.time
Intro to artificial intelligence tools	11:00
Group exercise: using AI to support you	
Lunch (45 mins)	
Statistical tests II	12.30
Break (15 mins)	13:30
Work on presentations	

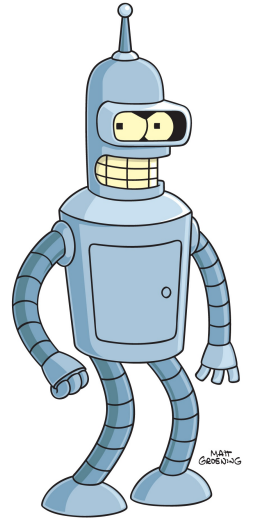
Times are approximate.



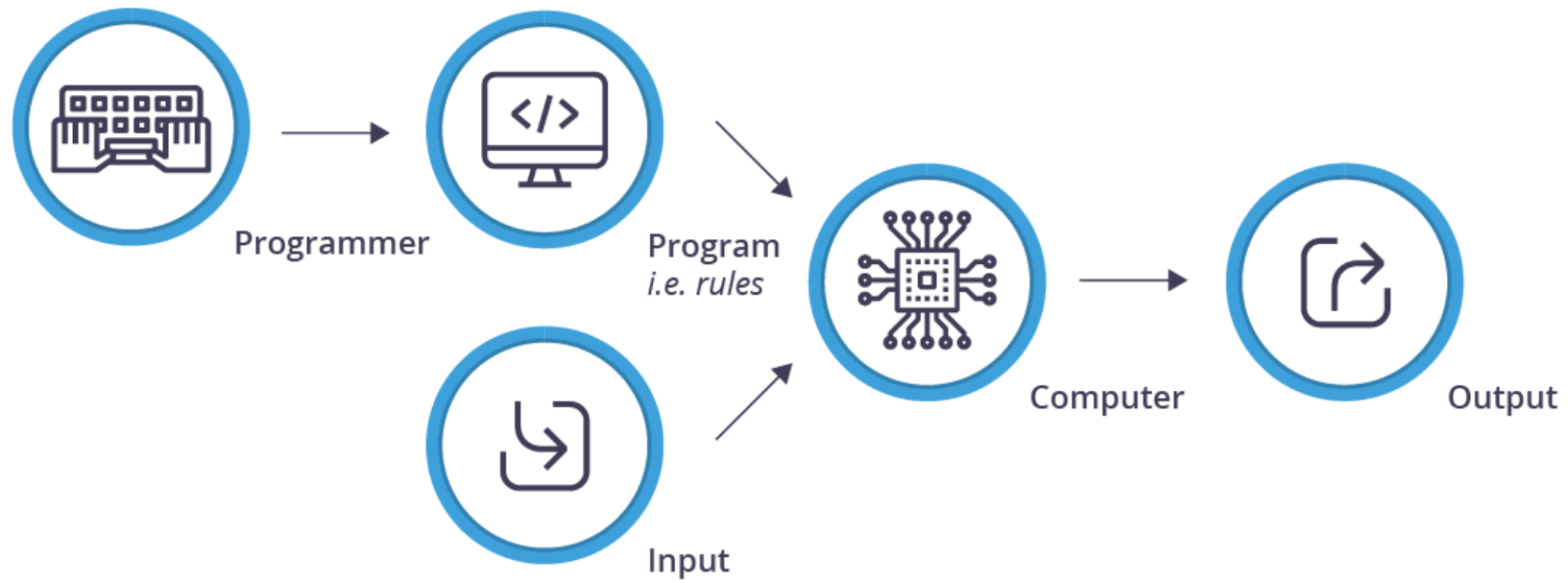
LoofandTimmy.com

What is Artificial Intelligence?

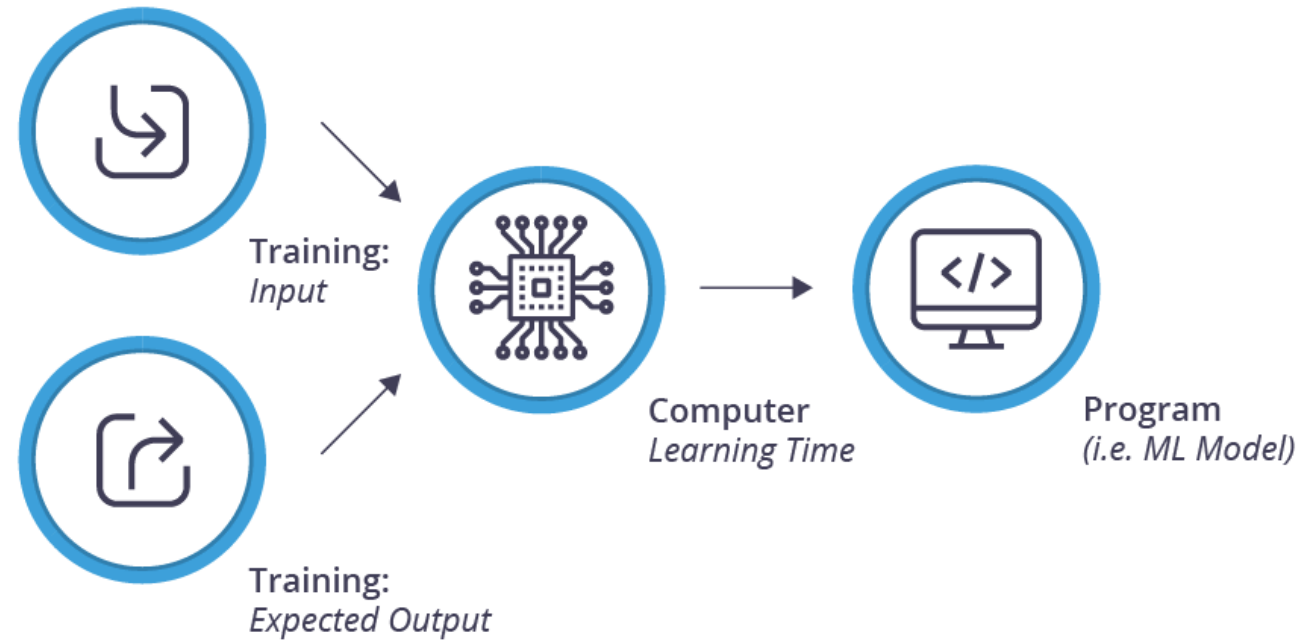
- The simulation of human intelligence.
- The ability of machines to perform tasks that typically require human intelligence, e.g., learning, problem-solving, and decision-making.
- AI technologies include machine learning, natural language processing, and computer vision.



Traditional Computing

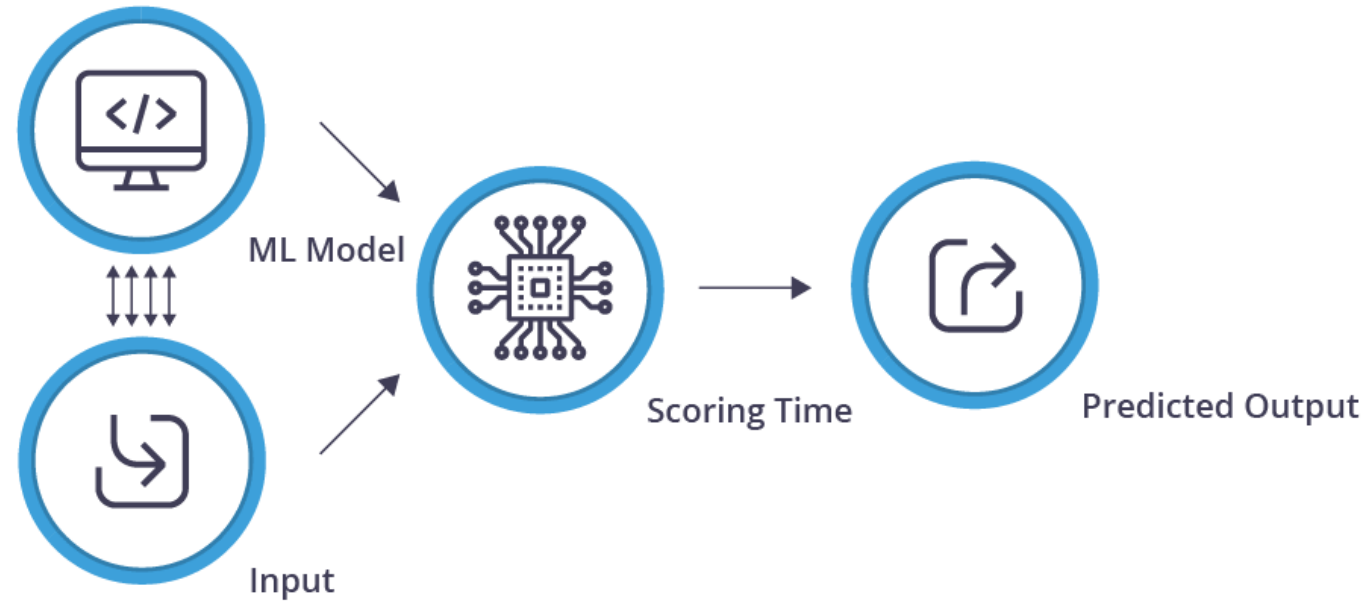


The Machine Learning **Training Process**



The two phases of Machine Learning

The Machine Learning **Scoring Process**

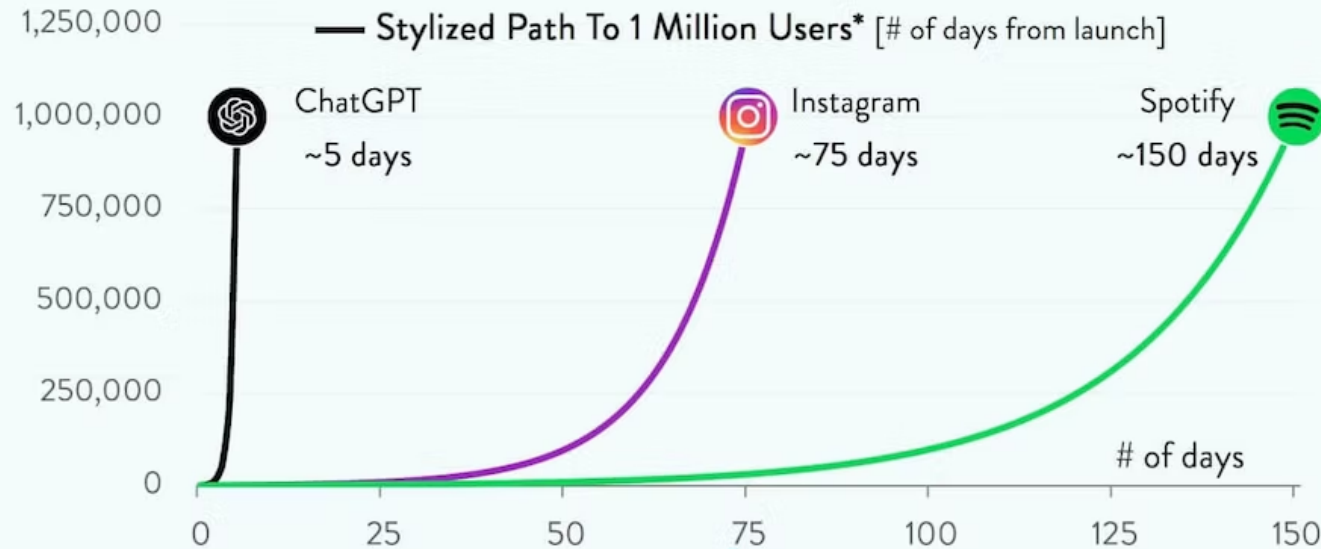
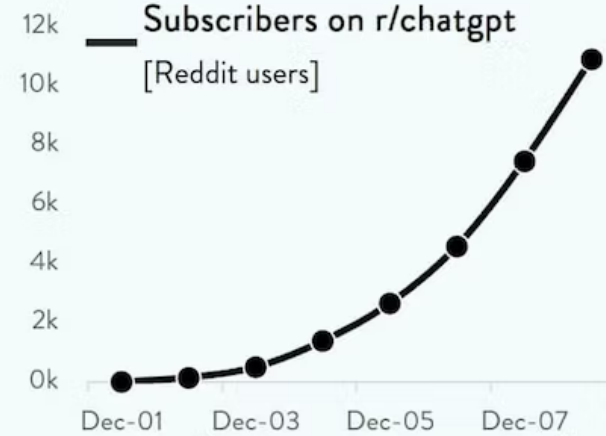
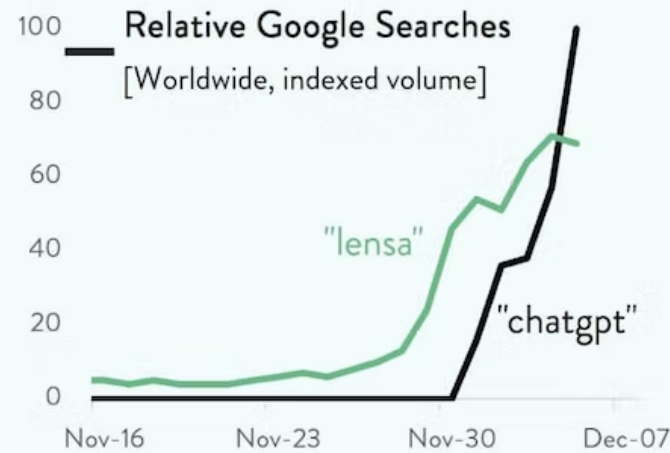


The two phases of Machine Learning

Artificial Intelligence tools

- AI is already widely used in everyday life, industry and research (inc. paleobio).
- Designed to analyze large amounts of data, recognize patterns, and make predictions (or decisions) based on that data.

ChatGPT From OpenAI Is A Bot Taking The Tech World By Storm



Sources: Google, Subredditstats, Media Reports

chart^r *Path is stylized to the 1m milestone

openAI ChatGTP

ChatGPT belongs to a class of machine learning Natural Language Processing models.

Digests huge quantities of text data and infer relationships between words. Used to predict a word within a sequence.

The model is filling in the blank with the most statistically probable word given the surrounding context.

Quick video: [What can you do with GPT-4?](#)

]

Next-token-prediction

The model is given a sequence of words with the goal of predicting the next word.

Example:
Hannah is a ____

Hannah is a *sister*
Hannah is a *friend*
Hannah is a *marketer*
Hannah is a *comedian*

Masked-language-modeling

The model is given a sequence of words with the goal of predicting a 'masked' word in the middle.

Example
Jacob [mask] reading

Jacob *fears* reading
Jacob *loves* reading
Jacob *enjoys* reading
Jacob *hates* reading

Learn more: [How ChatGPT works](#)

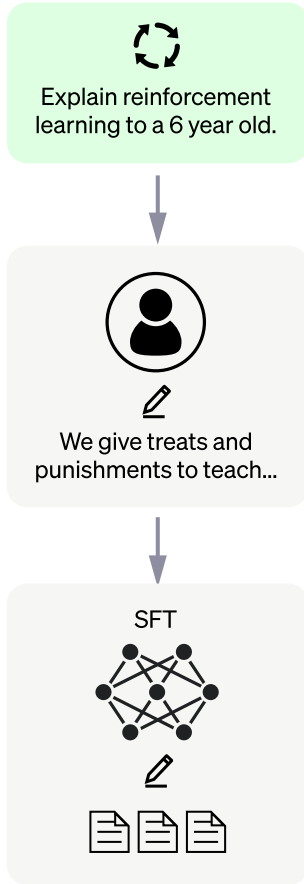
Step 1

Collect demonstration data and train a supervised policy.

A prompt is sampled from our prompt dataset.

A labeler demonstrates the desired output behavior.

This data is used to fine-tune GPT-3.5 with supervised learning.



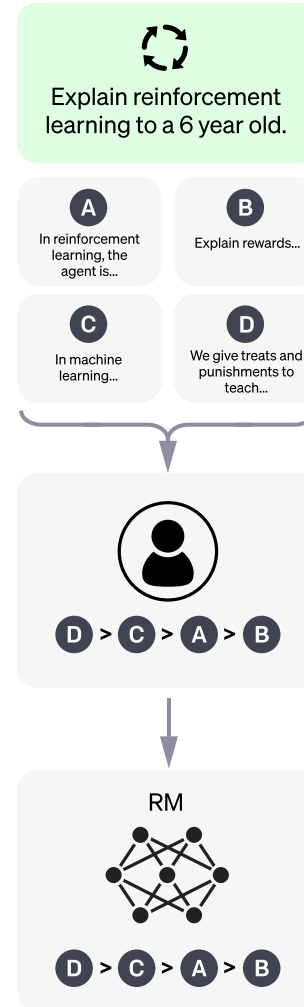
Step 2

Collect comparison data and train a reward model.

A prompt and several model outputs are sampled.

A labeler ranks the outputs from best to worst.

This data is used to train our reward model.



Step 3

Optimize a policy against the reward model using the PPO reinforcement learning algorithm.

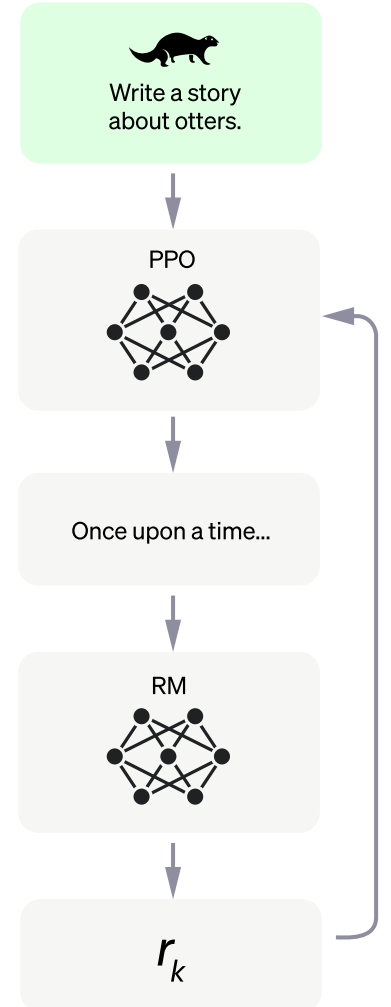
A new prompt is sampled from the dataset.

The PPO model is initialized from the supervised policy.

The policy generates an output.

The reward model calculates a reward for the output.

The reward is used to update the policy using PPO.



Demo

ChatGTP

Group exercise

In your working groups, access chatGTP and have some fun!

Some suggestions: write a poem / song / blog about some subject.

10:00

Can I use artificial intelligence for my research?

Absolutely!

- statistics - *ChatGPT for Data Analysts*
- coding - *How to learn to code using ChatGPT*
- writing
- summarising

Another demo

Be careful!

*"The train has left the train station
and is going at 150 miles per hour.
You are not going to stop it."*

Ayanna Howard, *The Economist: Beyond
ChatGPT: what chatbots mean for the future*



Refine your knowledge

Group exercise

Switch working groups, and refine your understanding of the following terms:

- Statistical hypotheses (null and alternative)
- Interpreting p-values
- Test statistics

10:00



Time for a break