



上海财经大学 商学院
COLLEGE OF BUSINESS
SHANGHAI UNIVERSITY OF FINANCE AND ECONOMICS

AI





[Verse]

Standing at the edge today
Future's calling in a way
Knowledge boundless on display
Come and join let's press play

[Verse 2]

Codes and circuits in our hands
Building dreams and making plans
With each byte we understand
AI's magic in our land

[Chorus]

Welcome to this world so bright
Algorithms taking flight
Undergrad the future's light
In this course let's shine so bright

[Verse 3]

From machine to human mind
Patterns hidden there we find
Every rule we redefine
AI's path to humankind

[Bridge]

Fields of data wait to bloom
In the lab and in the room
Excitement breaking through the gloom
AI's here we're bound to zoom

[Chorus]

Welcome to this world so bright
Algorithms taking flight
Undergrad the future's light
In this course we're reaching heights







- AI – Artificial Intelligence
- AGI – Artificial Generative Intelligence
- ML – Machine Learning
- DL – Deep Learning
- NLP – Natural Language Programming
- LLM – Large Language Model
- GPT – Generative Pre-trained Transformer

游戏设定

Tranquil Paths
Turtle Rock
The Glaive
Dark Forest
Dragon Fire

yy	随机	队伍 1		100%
电脑 (令人发狂的)	随机	队伍 2		100%
电脑 (令人发狂的)	随机	队伍 3		100%
电脑 (令人发狂的)	随机	队伍 4		100%

Turtle Rock



建议的玩家:
地图大小:
地形:

1v1 或 2v2
小型
洛丹伦的夏天

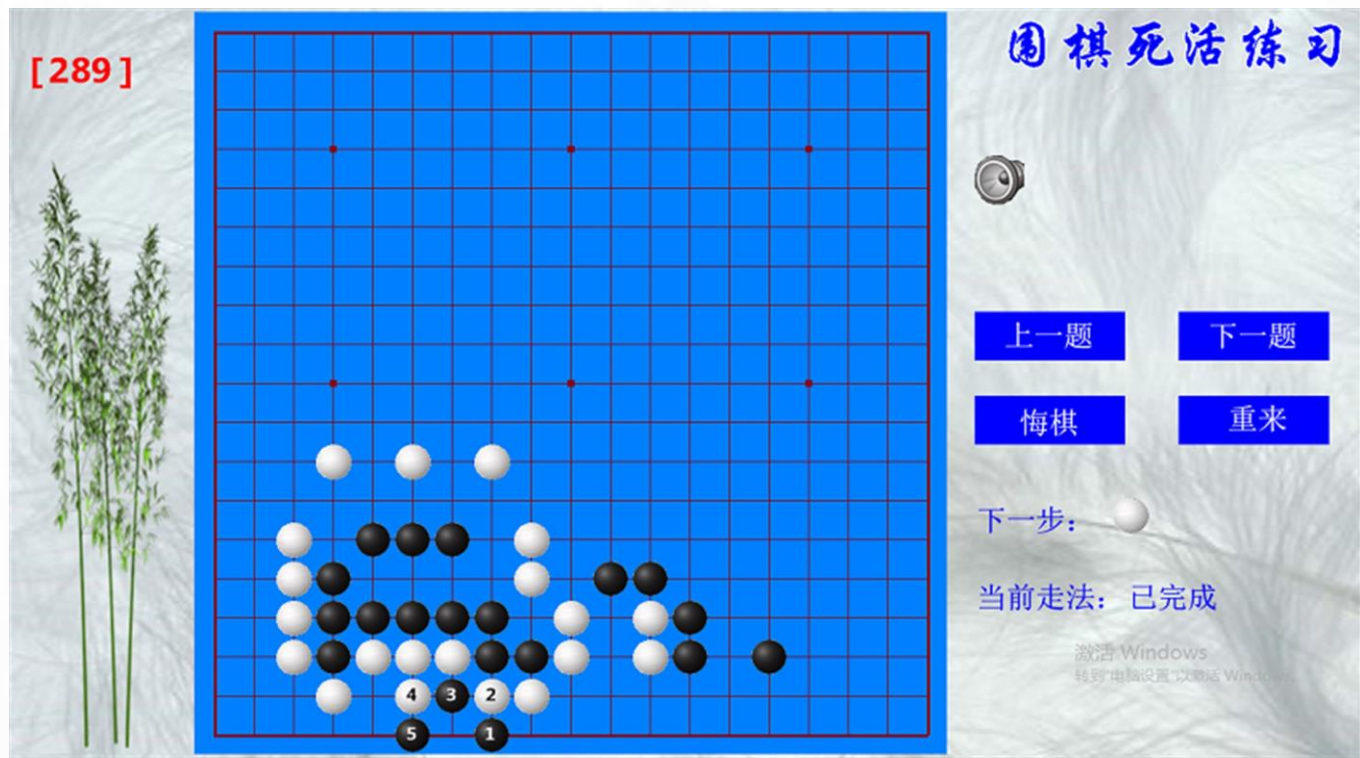
地图介绍

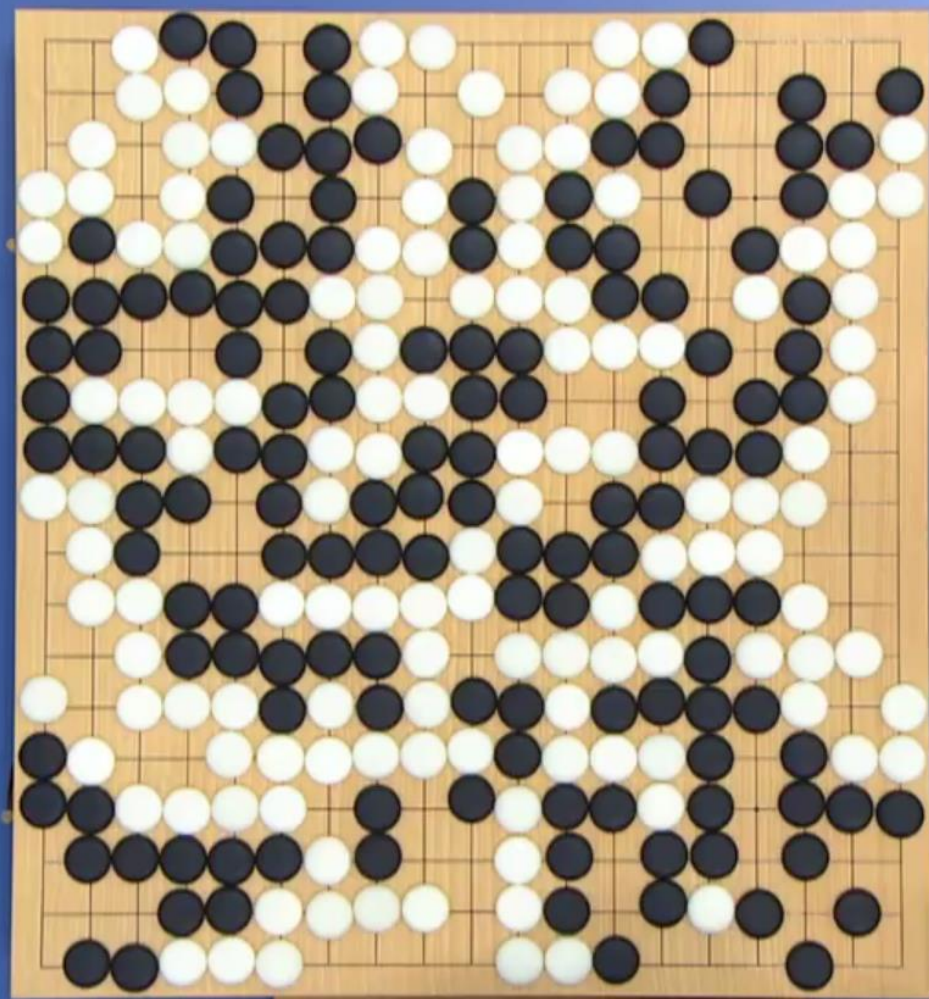
曾经是一座流亡者的岛屿,而今对追求宝物的人来说,是财富之岛。

高级选项(0)

开始游戏(S)

取消(A)





柯洁 KE JIE
00:13:28



ALPHAGO
01:30:35





机器学习 Machine Learning

机器学习：使用计算机来模拟人类的学习行为，从而获取知识，完善自我性能

- Supervised Learning: 监督学习
- Unsupervised Learning: 非监督学习
- Reinforcement Learning: 强化学习

监督学习

常见场景：识别、分类

训练集

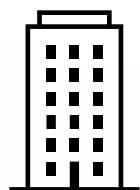


应用

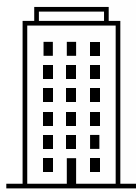


非监督学习

常见场景：异常识别（洗钱、金融风险），用户细分（推荐系统）



行业
资产
现金流
创始人背景
.....



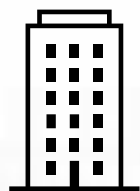
行业
资产
现金流
创始人背景
.....



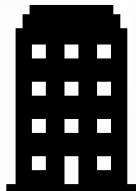
年龄
性别
职业
收入



年龄
性别
职业
收入



行业
资产
现金流
创始人背景
.....



破产!

行业
资产
现金流
创始人背景
.....



年龄
性别
职业
收入



年龄
性别
职业
收入



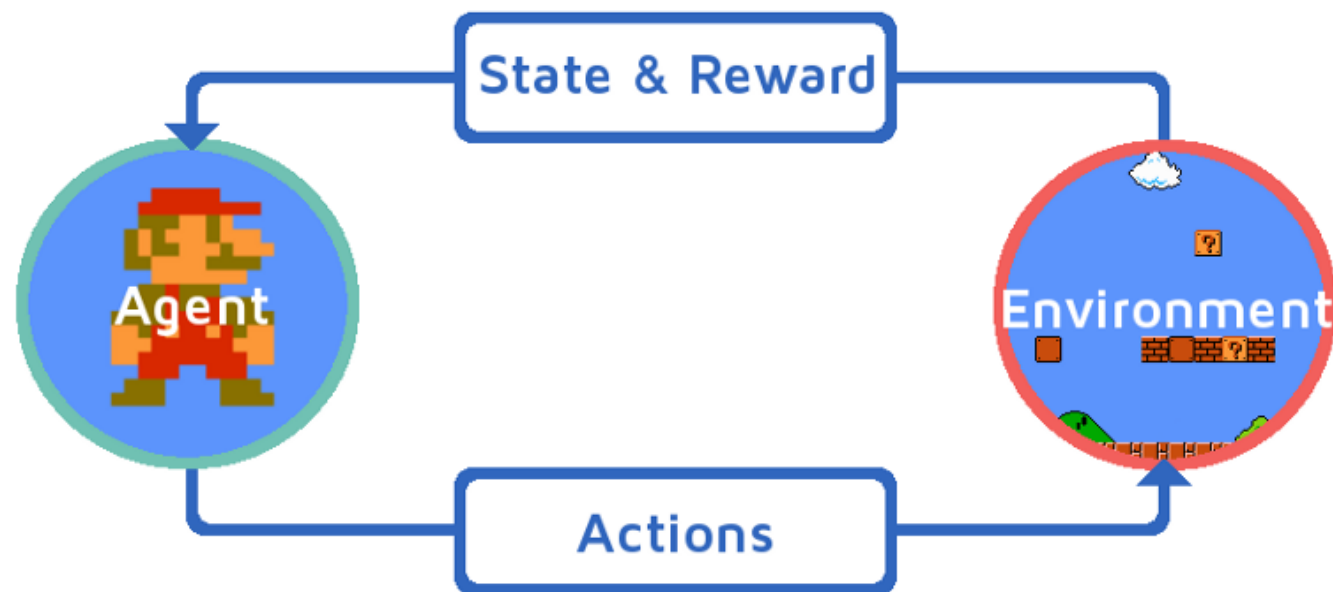
强化学习RL



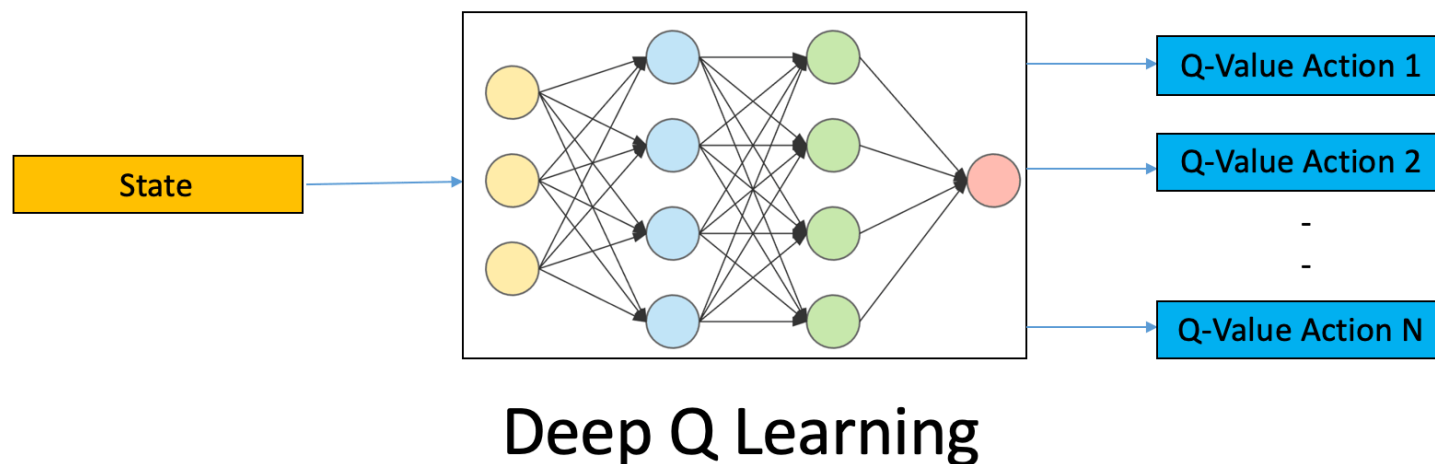
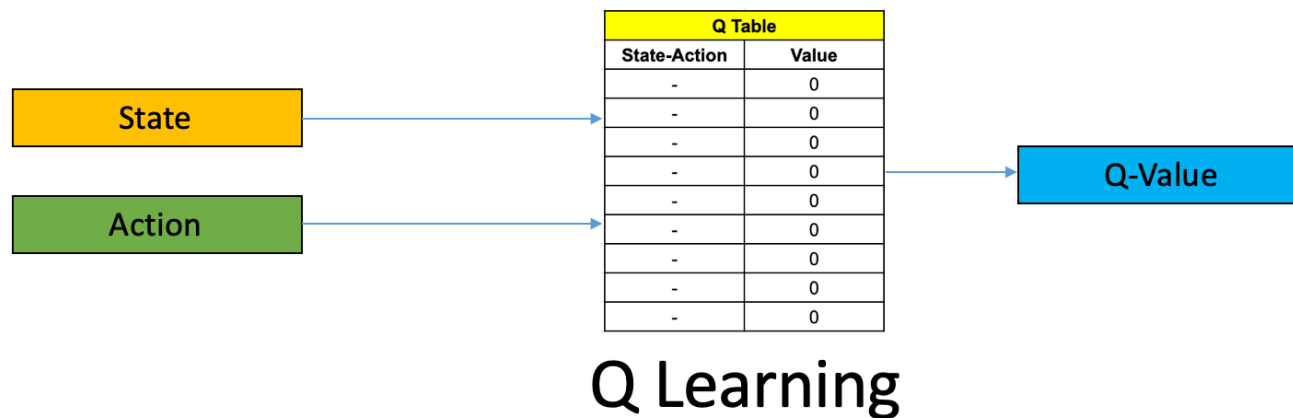
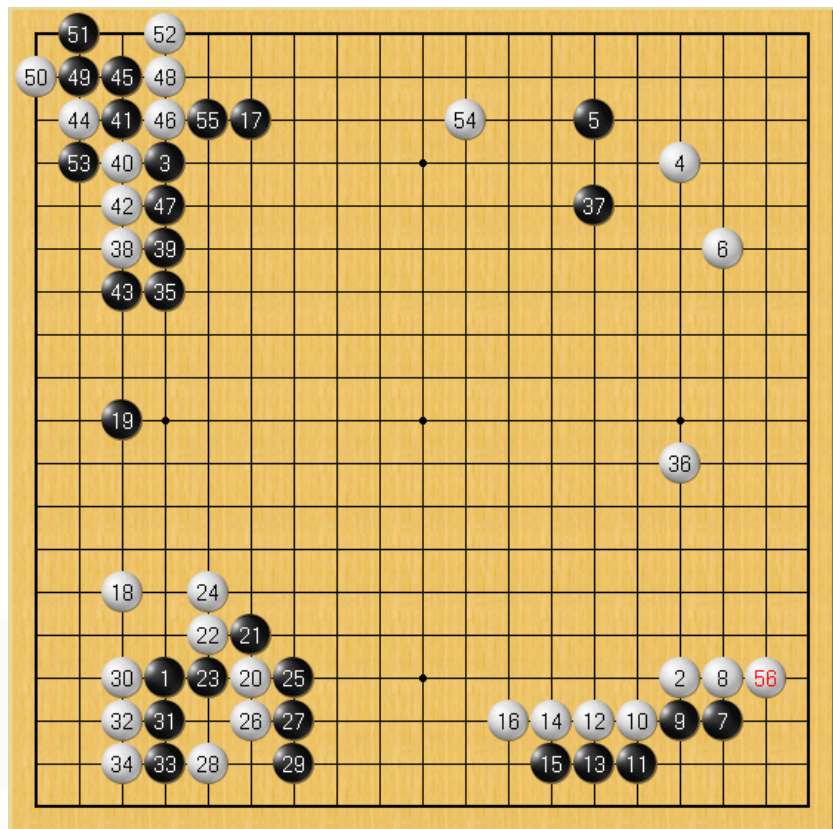
强化学习RL

- Agent智能体：按照一定逻辑行动的个体
- Environment 环境：一般指任务环境
- Action 行动
- State 状态
- Reward 奖励

怎么让Agent变得更智能，从而完成特定任务？



AlphaGo: 带有深度学习（神经网络）、强化学习的人工智能AI



机器学习是实现人工智能的一种方式



AI Learns:



强化学习RL – 特点

- 优化Optimization
 - 寻找最优的决策策略
 - 延迟后果Delayed Consequences
 - 行为和决策的后果不一定是立即反应的
 - 探索vs利用Exploration vs Exploitation
 - 短期和长期目标的冲突/平衡
 - 今天的投资影响明天的绩效
 - 通用性Generalization
 - 无法事先获得完美策略
- 与监督/非监督学习的最大区别

明确的任务环境

- 无人驾驶
- 工业机器人



一个段子：

ChatGPT 4o



20



翻译这句话



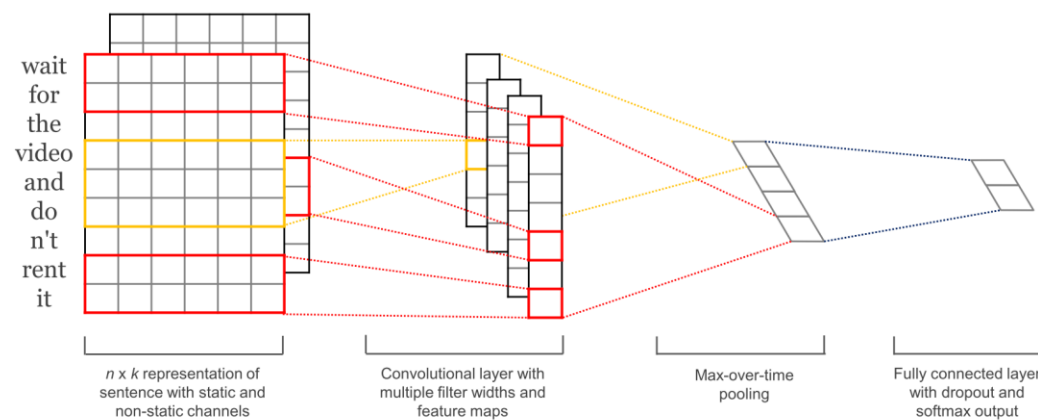
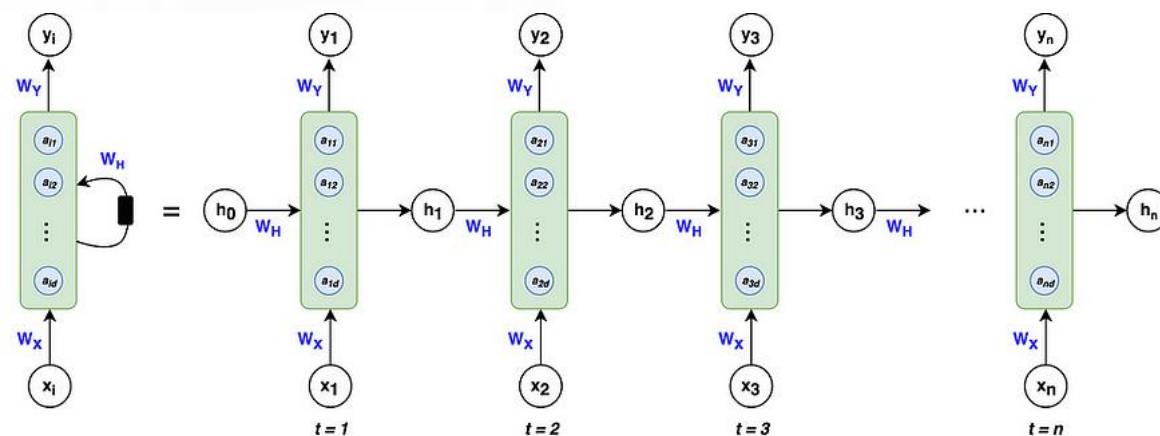
这条横幅上的文字是“欢迎新老师生前来就餐”。

翻译成英文可以是： "Welcome new teachers to dine before they pass away."

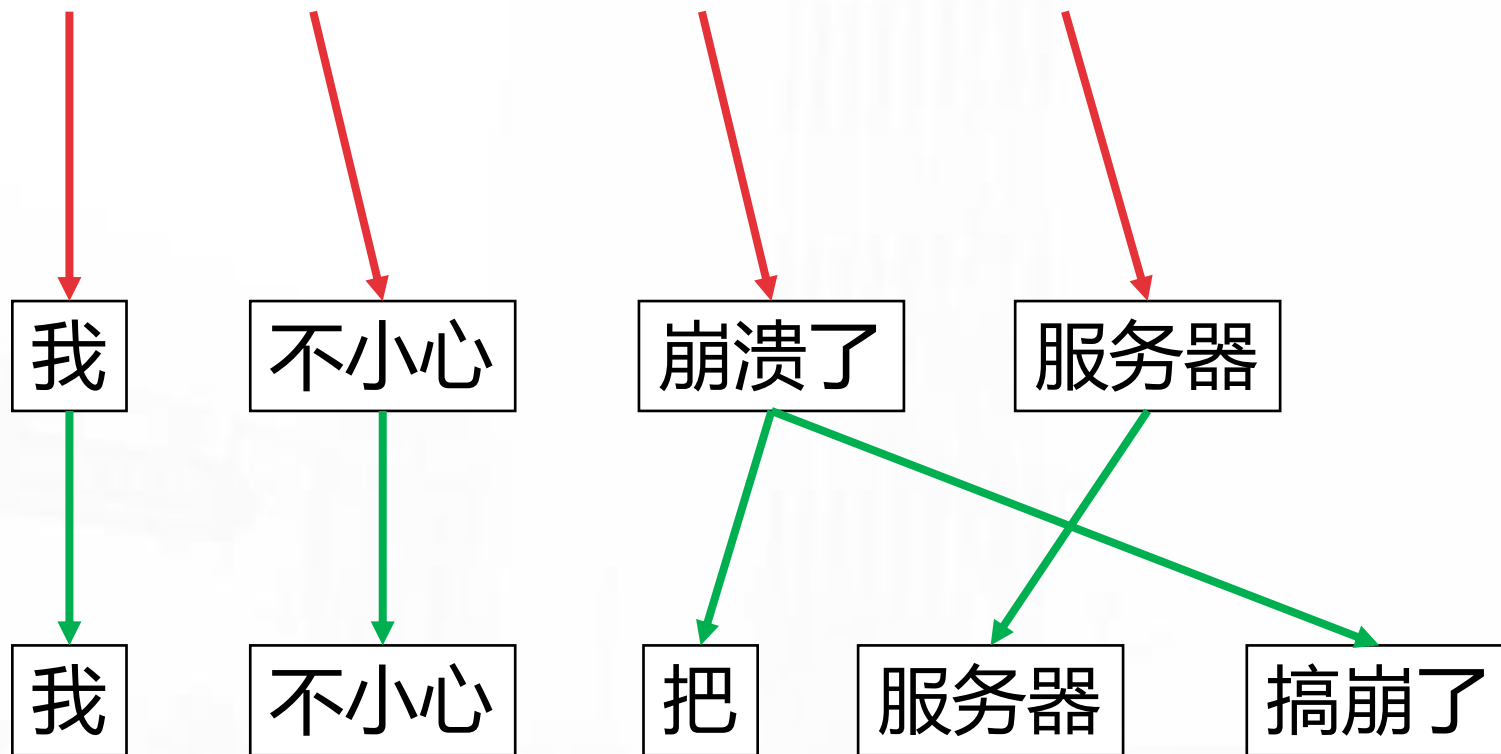
NLP

比如:

- RNN,
 - Recurrent Neural Network
- CNN
 - Convolutional Neural Network



I accidentally crashed the server.





I accidentally crashed the **server**.

服务器?
服务员?

Server, where is my dish?

老鹰在空中翱翔。

对手连打三个空中击球，把我都打出翔来了。



2017

Attention Is All You Need

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Abstract

The dominant sequence transduction models are based on complex recurrent or convolutional neural networks that include an encoder and a decoder. The best performing models also connect the encoder and decoder through an attention mechanism. We propose a new simple network architecture, the Transformer, based solely on attention mechanisms, dispensing with recurrence and convolutions entirely. Experiments on two machine translation tasks show these models to be superior in quality while being more parallelizable and requiring significantly less time to train. Our model achieves 28.4 BLEU on the WMT 2014 English-to-German translation task, improving over the existing best results, including ensembles, by over 2 BLEU. On the WMT 2014 English-to-French translation task, our model establishes a new single-model state-of-the-art BLEU score of 41.0 after

- Positional Encoding
- (Self) Attention

GPT版本	训练文本	参数	模型大小
1.0	5GB	177million	5GB
2.0	40GB	1.5billion	6GB
3.0	570GB	175billion	800GB
3.5	同上	同上	同上
4.0	预估10T	1000trillion	未公布



GPT

Generative Pre-trained Transformer

"My name is George, and I Love My _____"

Wife

Students

Country

Husband???

Father

Job

City

Laptop???

Mother

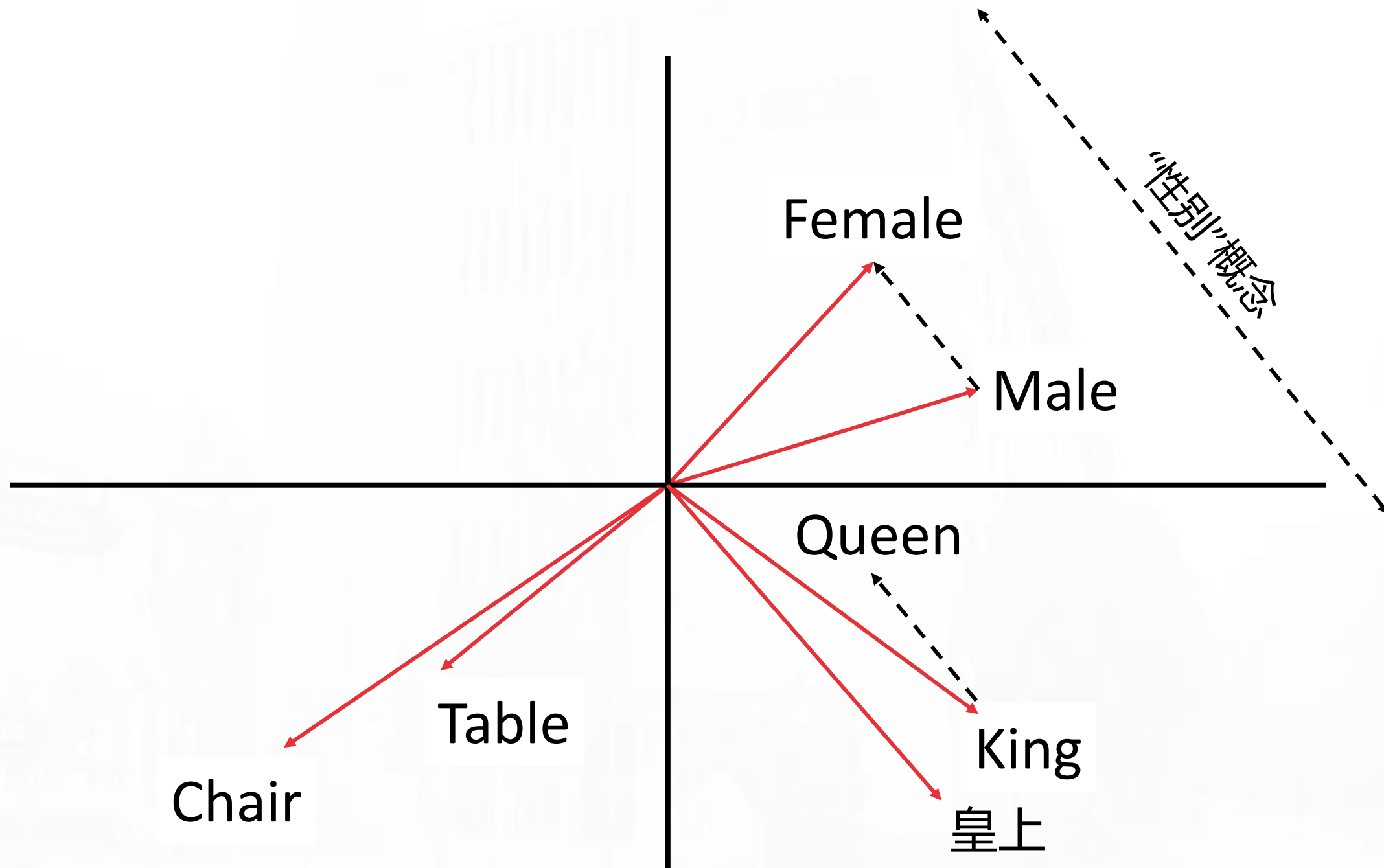
Career

School

Chair???

Child

Company





“My name is George, and I Love My _____”

1

2

3

4

5

6

7

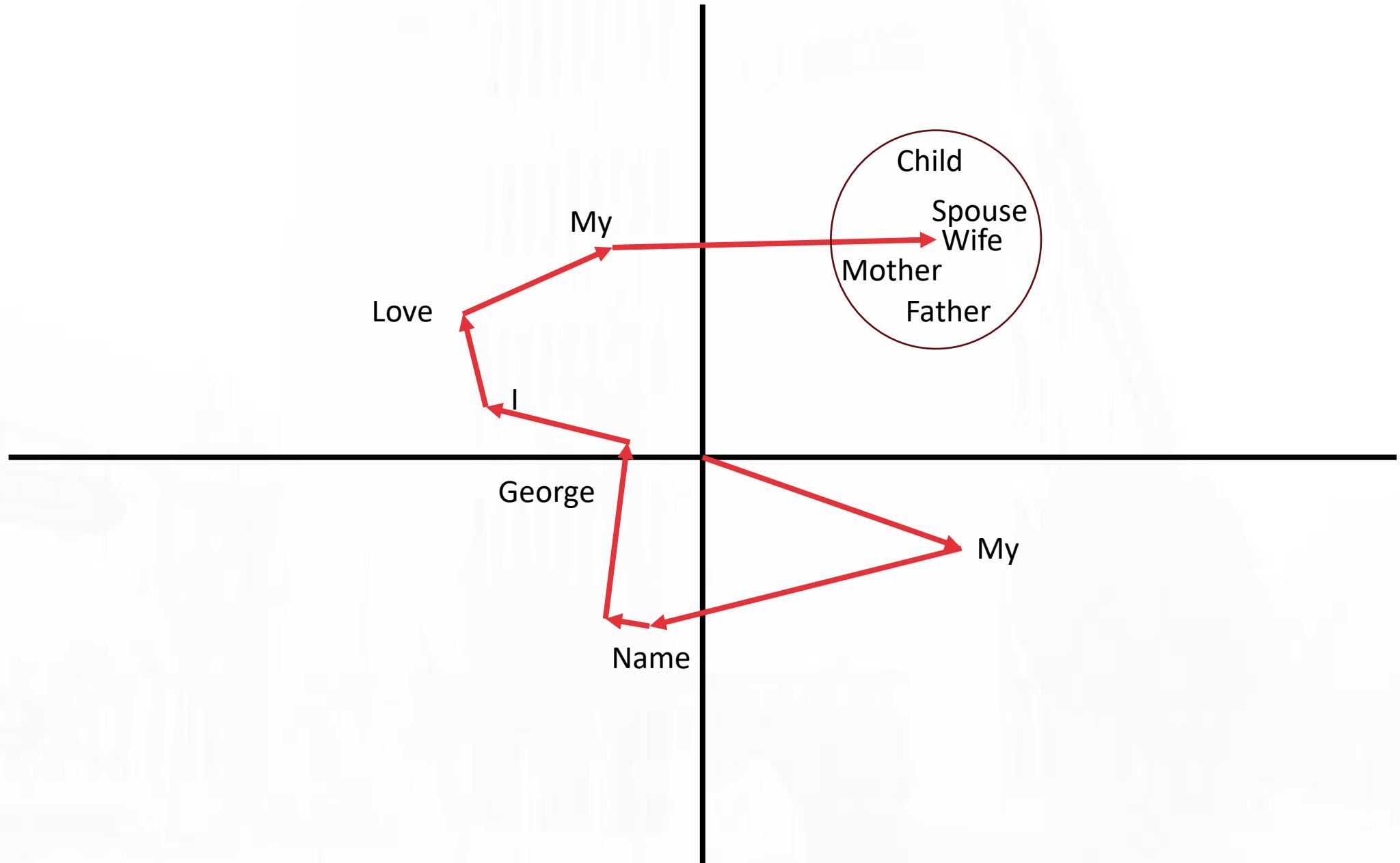
8

9

$$\begin{bmatrix} 1.5 \\ 2.3 \\ -2.0 \\ \dots \\ \dots \\ \dots \\ 8.8 \end{bmatrix} \begin{bmatrix} 2.1 \\ -2 \\ -3.3 \\ \dots \\ \dots \\ \dots \\ 0.8 \end{bmatrix} \begin{bmatrix} 0.1 \\ 1.2 \\ 13.3 \\ \dots \\ \dots \\ \dots \\ -1.8 \end{bmatrix}$$

$$\begin{bmatrix} 1.5 \\ 2.3 \\ -2.0 \\ \dots \\ \dots \\ \dots \\ 8.8 \end{bmatrix}$$

比如，GPT3.0有12万个维度



“My name is George, and I Love My _____”

Wife	8
Child	4
Son	2
Father	1
Mother	1
Brother	-1
Daughter	-1
Husband	-10

Softmax Function



概率

(总和0-1之间)



Softmax Function

$$P_i = \frac{e^{\frac{y_i}{T}}}{\sum_{k=1}^n e^{\frac{y_k}{T}}}$$

Wife	8
Child	4
Son	2
Father	1

$$\text{Prob}[\text{"Wife"}] = \frac{e^{8/\tau}}{e^{8/\tau} + e^{4/\tau} + e^{2/\tau} + e^{1/\tau}}$$

τ : Temperature
 $0 < \tau < \text{正无穷}$



Prompt指令

Prompt Engineering指令工程

- Write an opening introduction music to course on AI. Make it exciting and energetic.
- The music is good. But include more classical music instruments, strings and pianos.
- Add a Chinese sentence to the music.

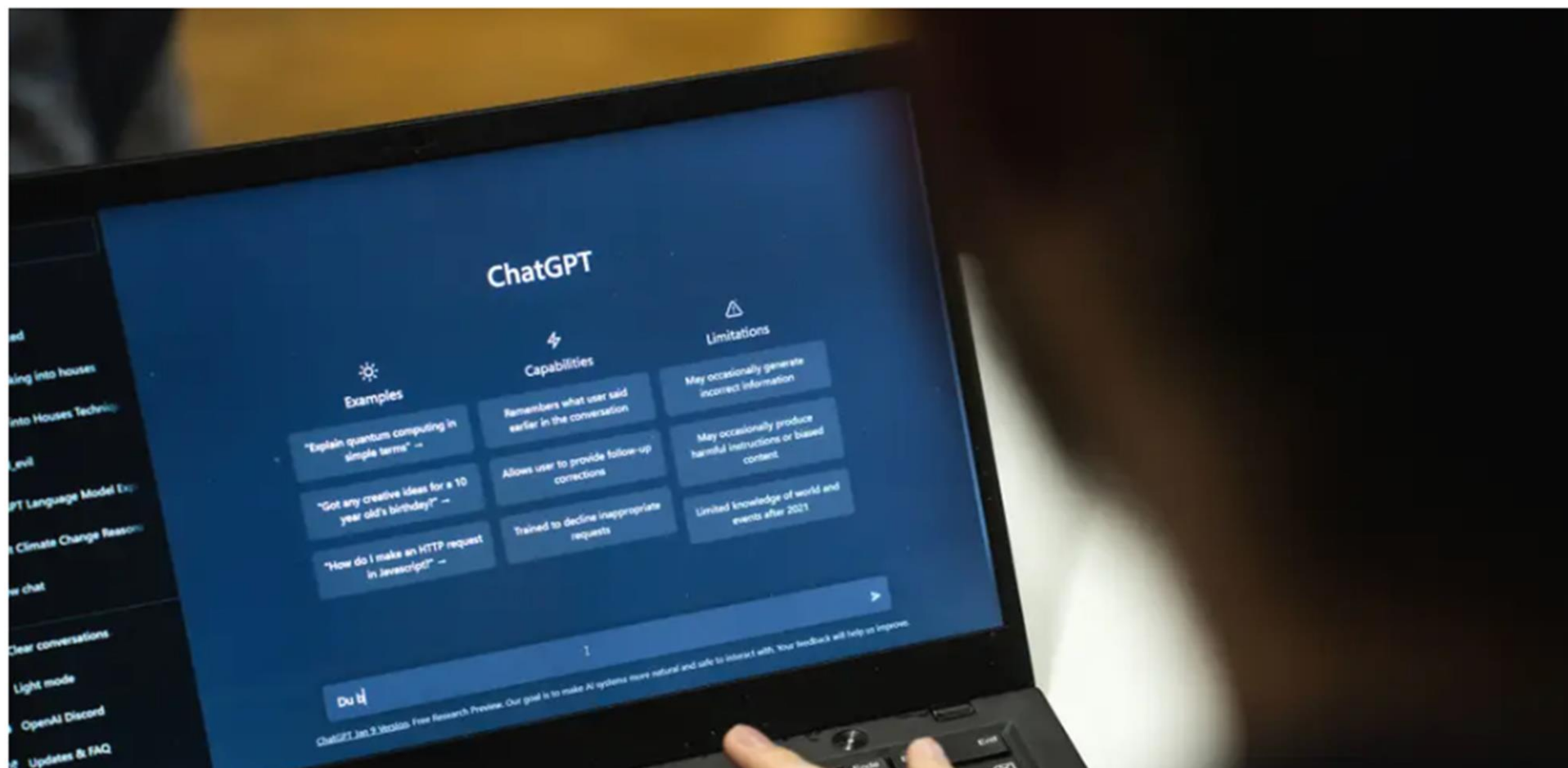
TECH

Getting emotional with ChatGPT could get you the best outputs

Aaron Mok Nov 12, 2023, 6:02 PM GMT+8

Share

Save





回家作业

- 使用一个AGI生产工具，如ChatGPT, SUNO等
- 明确工作目标，并给出初步指令。
- 更具第一版输出，进行



后续课程计划

9.27 AI1.0

9.29 参访

10.11 AI 2.0

10.18 3D Printing

10.25 Virtual Reality

11.1 总结