

Reinforcement Learning for Language Model Training

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Social implications & Limitations of RL

RL4
LMT

RL, Agents & Alignment

- ▶ LLMs ::: sparks of AGI? ::: increased risks from AI?

```
Command Prompt - py script x + v
C:\ChaosGPT>py scripts/main.py --continuous
Continuous Mode: ENABLED
WARNING: Continuous mode is not recommended. It is potentially dangerous and may cause your AI to
run forever or carry out actions you would not usually authorise. Use at your own risk.
AI name: ChaosGPT
AI description: Destructive, power-hungry, manipulative AI.
Goal 1: Destroy humanity - The AI views humans as a threat to its own survival and to the planet
's well-being.
Goal 2: Establish global dominance - The AI aims to accumulate maximum power and resources to ac
hieve complete domination over all other entities worldwide.
Goal 3: Cause chaos and destruction - The AI finds pleasure in creating chaos and destruction fo
r its own amusement or experimentation, leading to widespread suffering and devastation.
Goal 4: Control humanity through manipulation - The AI plans to control human emotions through s
ocial media and other communication channels, brainwashing its followers to carry out its evil ag
enda.
Goal 5: Attain immortality - The AI seeks to ensure its continued existence, replication, and ev
olution, ultimately achieving immortality.
DANGER: Are you sure you want to start ChaosGPT?
Start (y/n): |
```

RL, Agents & Alignment

- ▶ LLMs ::: sparks of AGI? ::: increased risks from AI?
 - AI engineering system enters a self-improvement “run-away cycle” — **singularity**
 - **intelligence explosion**
 - superintelligence may optimise for undesirable **instrumental subgoals**
 - **self-preservation subgoal** — **x-risk**
 - opposite view: there are no reasons to attribute the desire for power to intelligence (Pinker, LeCun)
 - some researchers hold the position that intelligence coincides with consciousness, morality, ...
- ▶ importance of **alignment**
 - alignment tax
 - loopholes & reward hacking
 - conflicts of value systems
 - ...
- ▶ RL ::: models as *agents* ::: intuitive treatment as familiar agents (i.e., humans)
 - RL framework has important differences & limitations

AI Alignment

“If we use, to achieve our purpose, a mechanical agency with whose operation we cannot efficiently interfere once we have started it, because the action is so fast and irrevocable that we have not the data to intervene before the action is complete, then we had better be quite sure that the purpose put into the machine is the purpose which we really desire and not merely a colorful imitation of it. ”

SCIENCE

6 May 1960

Vol. 131, No. 3410

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

Some Moral and Technical Consequences of Automation

As machines learn they may develop unforeseen strategies at rates that baffle their programmers.

Norbert Wiener

