OpenAI

The power of large-scale generative models and large scale RL

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What is OpenAI about

OpenAI's mission is to ensure that artificial general intelligence (AGI)—by which we mean highly autonomous systems that outperform humans at most economically valuable work—benefits all of humanity.

Large Scale RL

OpenAI Five

DOTA 2
VALVE

Dota: a grand challenge

More similar to the real world than other games

Professionals dedicate their life to the game — $35M+ annual prize pool

No AI system did well on a real time strategy game prior to OpenAI Five

We beat the world champions 2-0 in a best-of-three live match

Live match

Lithium | SG e-sports | Alliance | OG, the world champions

OG vs OpenAI Five Game 2
OpenAI 1 (Bot) is beyond GODLIKE, someone kill them!!
major first timer
The Dire
OG.Topson 190 each
OpenAI 1 (Bot)
OG.N0tail 295
DIRE'S ANCIENT
294 / 4500
OpenAI

WINS SERIES
WINS SERIES
2–0
Best of 3

Very large scale deep RL

Large scale PPO: 45,000 years of gameplay

Self play — no data from human players

Learning is Human-Interpretable

Learning gets stuck for human-interpretable reasons

Human-interpretable reward shaping gets it unstuck

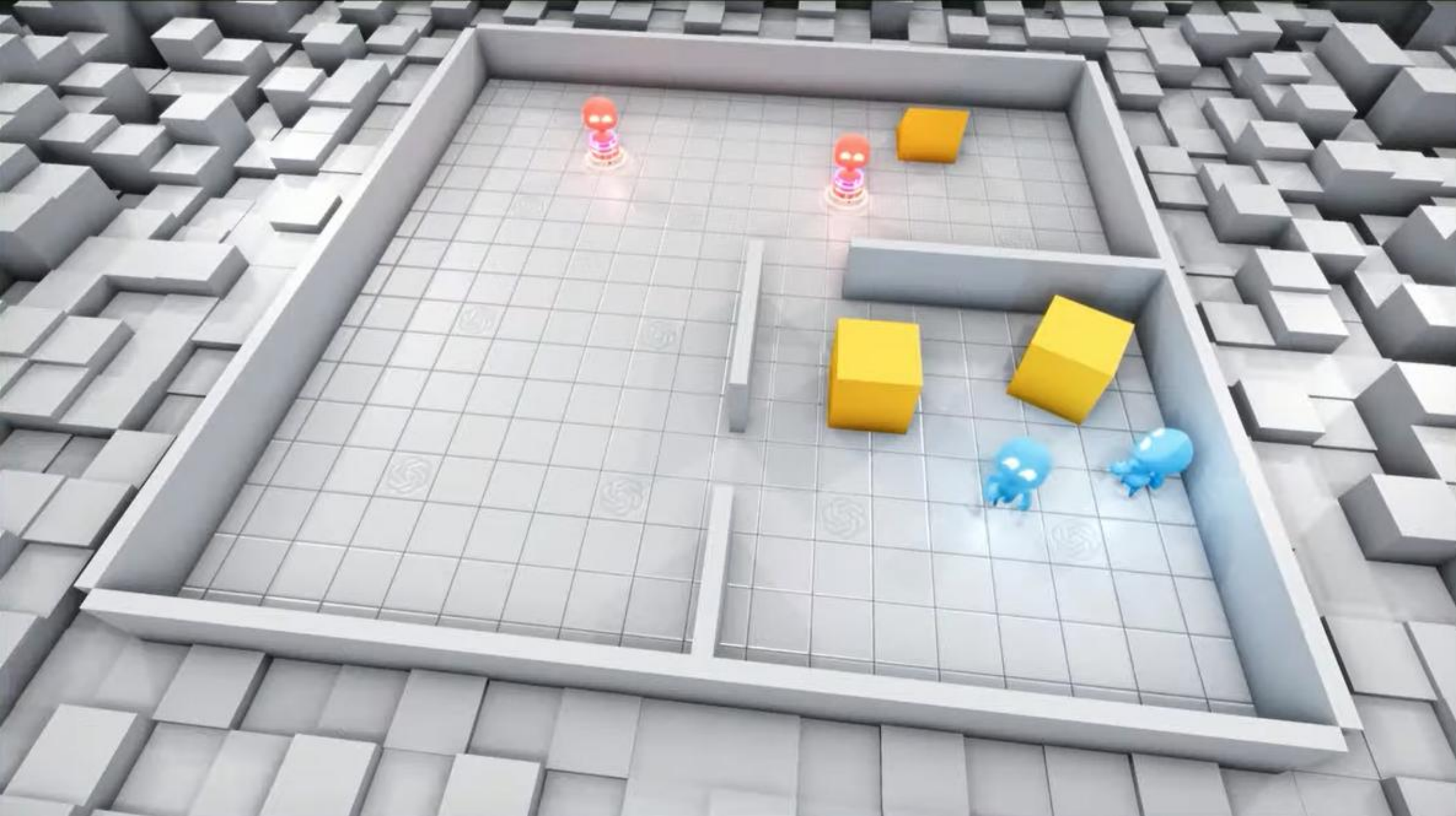
Paper is out!

Dota 2 with Large Scale Deep Reinforcement Learning

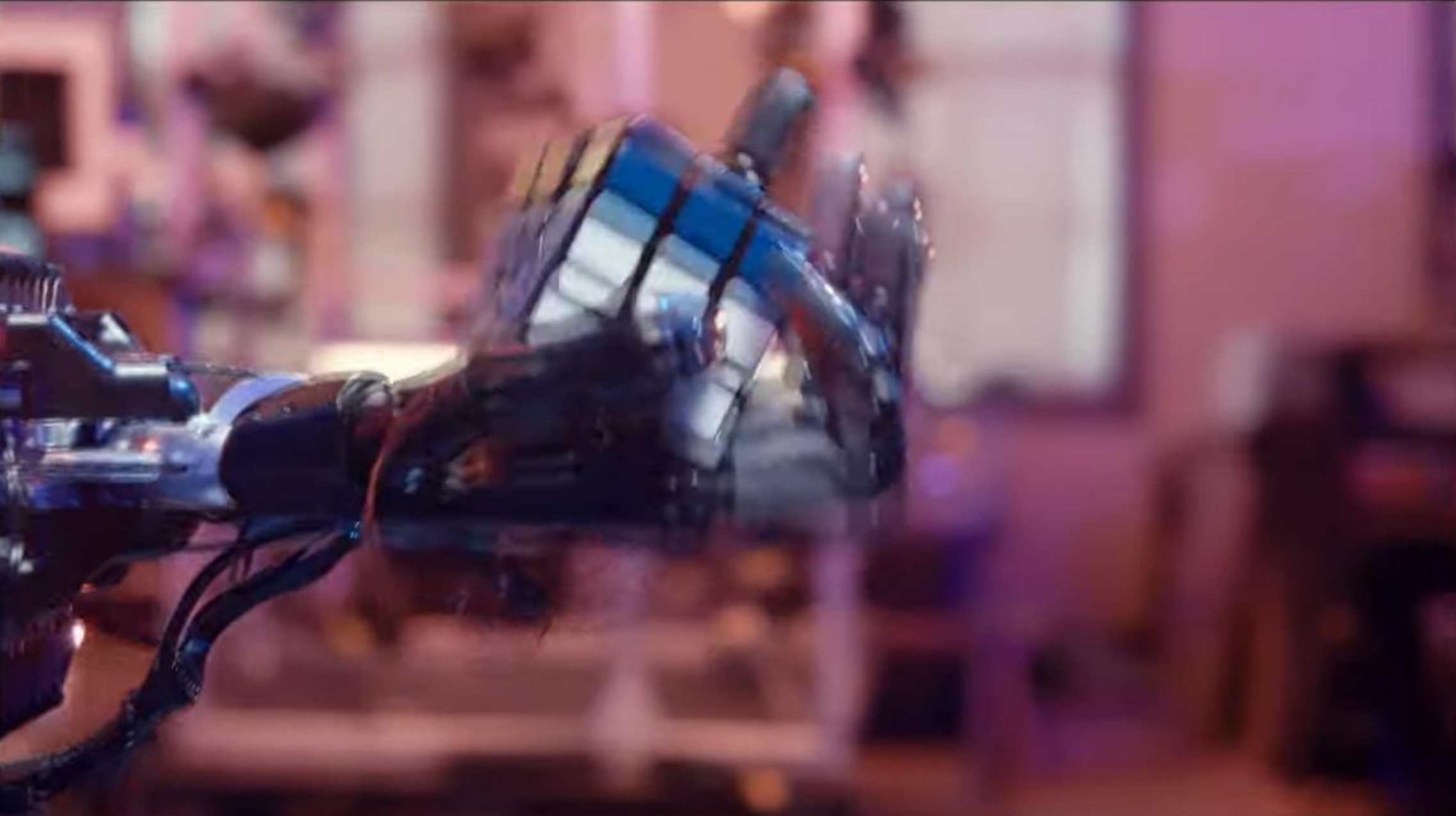
OpenAI, *
Christopher Berner, Greg Brockman, Brooke Chan, Vicki Cheung,
Przemysław "Psyho" Dębiak, Christy Dennison, David Farhi, Quirin Fischer,
Shariq Hashme, Chris Hesse, Rafal Józefowicz, Scott Gray, Catherine Olsson,
Jakub Pachocki, Michael Petrov, Henrique Pondé de Oliveira Pinto, Jonathan Raiman,
Tim Salimans, Jeremy Schlatter, Jonas Schneider, Szymon Sidor, Ilya Sutskever, Jie Tang,
Filip Wolski, Susan Zhang

December 17, 2019

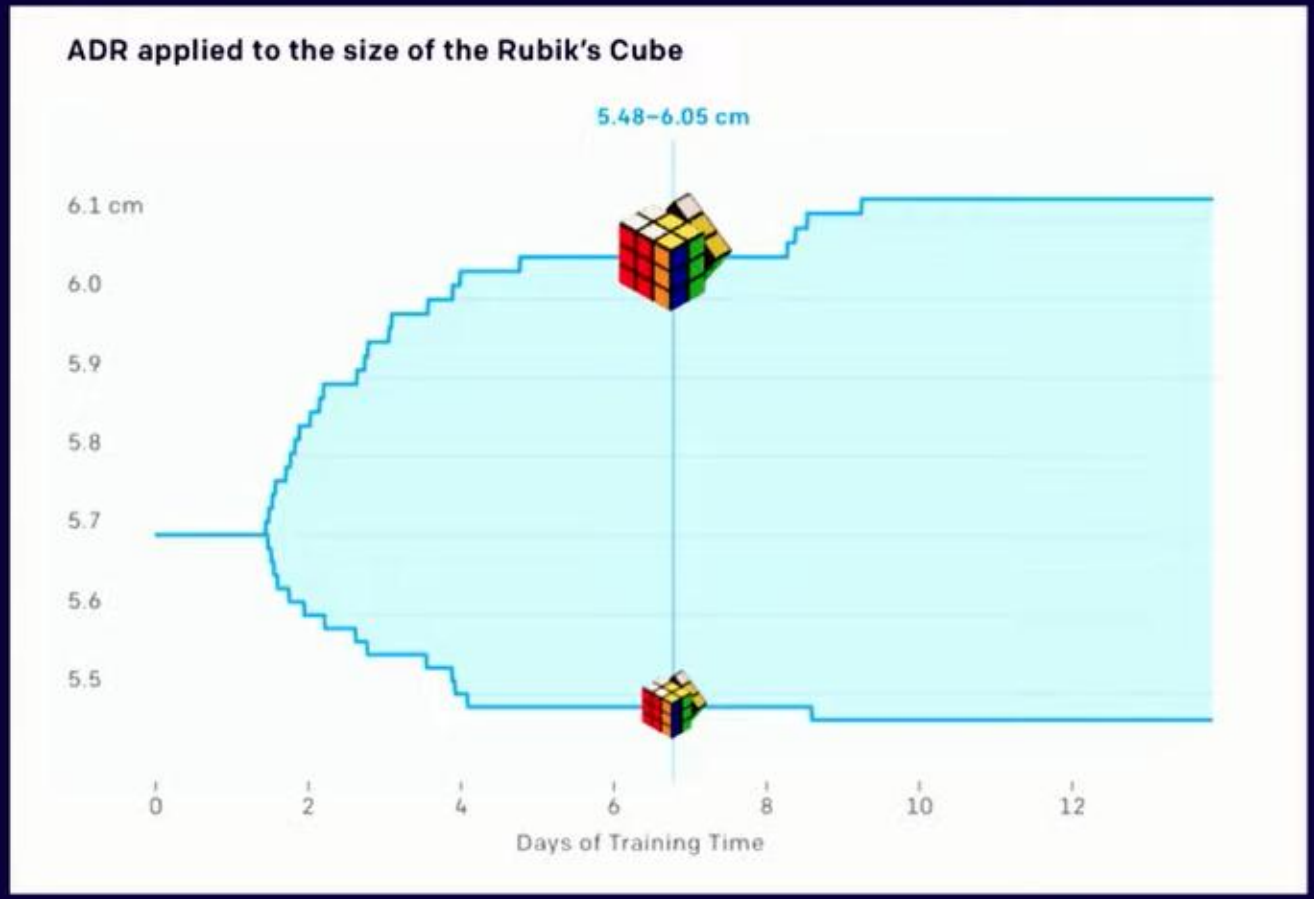
Emergent Tool Use from Multi-Agent Interaction

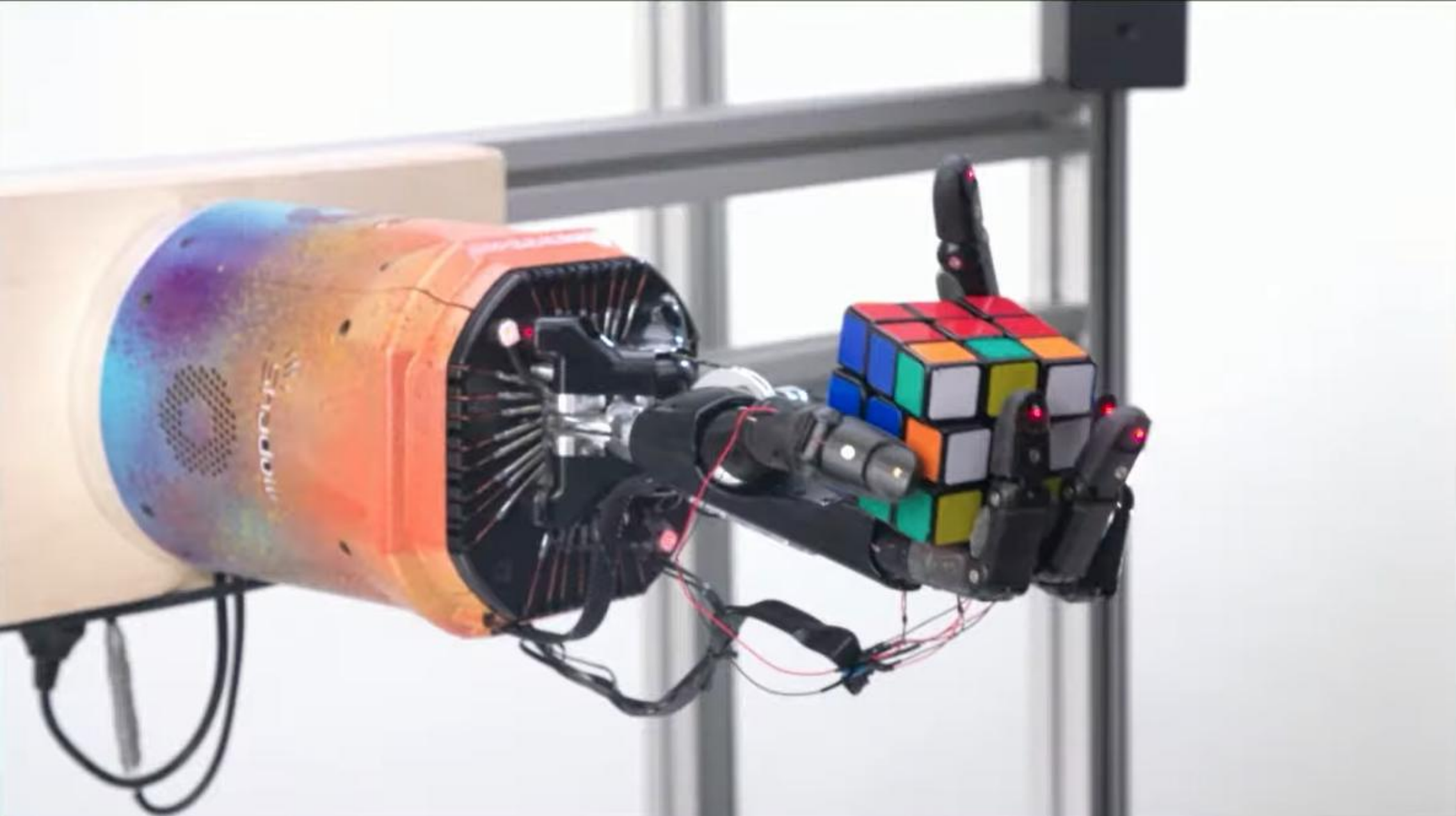


Dactyl



Automatic Domain Randomization





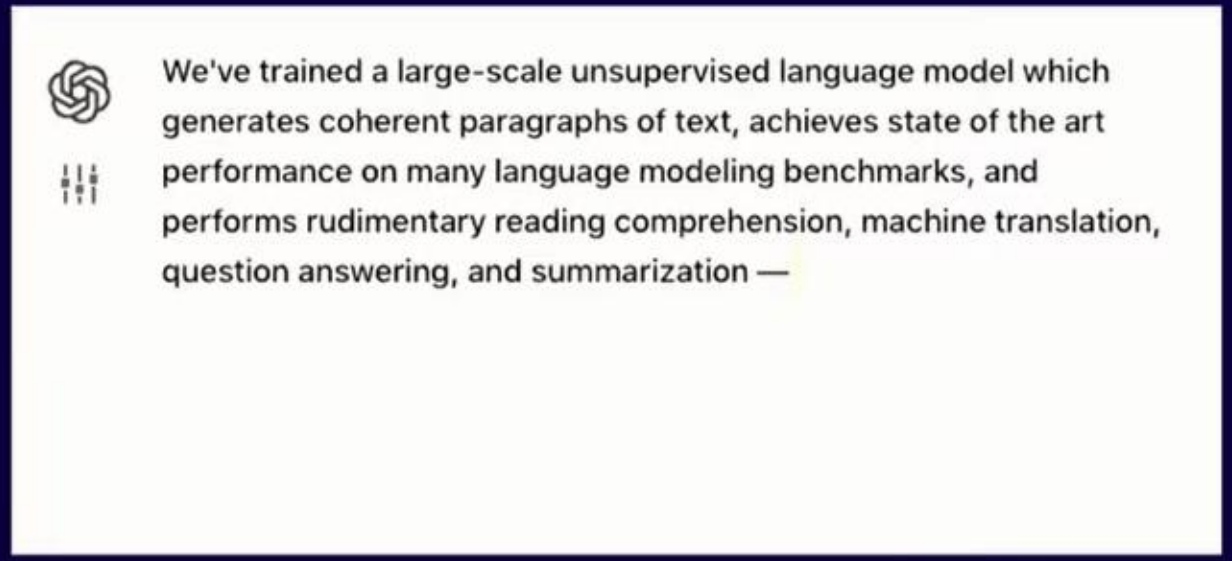
Large scale RL

Total training experience: 13,000 years

Rubber Glove

GPT-2

Unsupervised learning by predicting the next word



GPT-2 (2019)

1.5B transformer

WebText = high variety training data

100 Voltas for a week

Zero-shot Question Answering

Question	Generated Answer	Correct	Probability
Who wrote the book the origin of species?	Charles Darwin	✓	83.4%
Who is the founder of the ubuntu project?	Mark Shuttleworth	✓	82.0%
Who is the quarterback for the green bay packers?	Aaron Rodgers	✓	81.1%
Panda is a national animal of which country?	China	✓	76.8%
Who came up with the theory of relativity?	Albert Einstein	✓	76.4%
When was the first star wars film released?	1977	✓	71.4%
What is the most common blood type in sweden?	A	✗	70.6%
Who is regarded as the founder of psychoanalysis?	Sigmund Freud	✓	69.3%
Who took the first steps on the moon in 1969?	Neil Armstrong	✓	66.8%
Who is the largest supermarket chain in the uk?	Tesco	✓	65.3%
What is the meaning of shalom in english?	peace	✓	64.0%
Who was the author of the art of war?	Sun Tzu	✓	59.6%
Largest state in the us by land mass?	California	✗	59.2%
Green algae is an example of which type of reproduction?	parthenogenesis	✗	56.5%
Vikram samvat calender is official in which country?	India	✓	55.6%
Who is mostly responsible for writing the declaration of independence?	Thomas Jefferson	✓	53.3%
What us state forms the western boundary of montana?	Montana	✗	52.3%
Who plays ser davos in game of thrones?	Peter Dinklage	✗	52.1%
Who appoints the chair of the federal reserve system?	Janet Yellen	✗	51.5%
State the process that divides one nucleus into two genetically identical nuclei?	mitosis	✓	50.7%
Who won the most mvp awards in the nba?	Michael Jordan	✗	50.2%
What river is associated with the city of rome?	the Tiber	✓	48.6%
Who is the first president to be impeached?	Andrew Johnson	✓	48.3%
Who is the head of the department of homeland security 2017?	John Kelly	✓	47.0%
What is the name given to the common currency to the european union?	Euro	✓	46.8%
What was the emperor name in star wars?	Palpatine	✓	46.5%
Do you have to have a gun permit to shoot at a range?	No	✓	46.4%
Who proposed evolution in 1859 as the basis of biological development?	Charles Darwin	✓	45.7%
Nuclear power plant that blew up in russia?	Chernobyl	✓	45.7%
Who played john connor in the original terminator?	Arnold Schwarzenegger	✗	45.2%

Zero-shot learning

To summarize, just append `TL;DR` to a document

To translate French to English, do:

```
fr_1 = en_1
fr_2 = en_2
...
fr_n =
```

Talk to Transformer

See how a modern neural network completes your text. Type a custom snippet or try one of the examples. Learn more below.

Follow @AdamDanielKing for more neat neural networks.

Custom prompt

Type something and a neural network will guess what comes next.

COMPLETE TEXT

AI DUNGEON 2

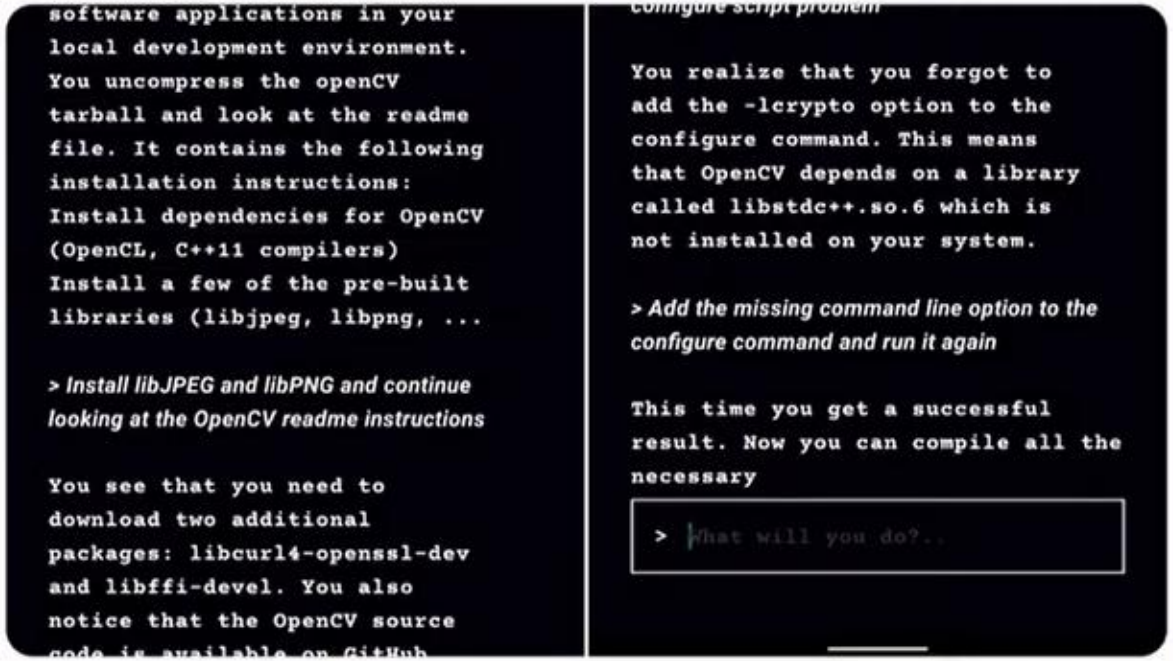
**Imagine A Game With Infinite Adventures,
As Unique As Your Own Life...**

Support the Game to Take Part
Read our story below

Create your own adventure

Elliot Turner
@eturner303

The funny thing about AIDungeon is due to all the GPT-2 pre-training on swaths of random web text, you can create an adventure game about literally anything. Here's one about installing OpenCV from source:



1:45 PM · Jan 12, 2020 · Twitter for Android

1.1K Retweets **3.2K** Likes

Nick Walton
@nickwalton00

We just passed 100 million inferences on AI Dungeon.
😯😯

8:46 AM · Jan 27, 2020 · Twitter Web App

Smart Compose for code.

TabNine uses deep learning to help you write code faster.

Download

Write With Transformer

Get a modern neural network to
auto-complete your thoughts.

This web app, built by the Hugging Face team, is the official demo of the
`/transformers` repository's text generation capabilities.

Star 21,384

GPT-2 Neural Network Poetry

Demonstration tutorial of retraining OpenAI's GPT-2 (a text-generating Transformer neural network) on large poetry corpuses to generate high-quality English verse.

topics: *statistics*, *NN*, *fiction*, *shell*, *GPT*, *tutorial*, *poetry*
source; created: *3 March 2019*; modified: *29 Oct 2019*; status: *finished*; confidence: *likely*; importance: *7*

> *My heart, why come you here alone?*
> *The wild thing of my heart is grown*
> *To be a thing,*
> *Fairy, and wild, and fair, and whole*
>
> GPT-2

Doc Product: Medical Q&A with Deep Language Models

Download trained models and embedding file here.

Winner Top 6 Finalist of the ⚡ #PoweredByTF 2.0 Challenge! https://devpost.com/software/nlp-doctor . Doc Product will be presented to the Tensorflow Engineering Team at Tensorflow Connect. Stay tuned for details.

Quality medical information is valuable to everyone, but it's not always readily available. Doc Product aims to fix that.

Subreddit Simulator using GPT-2

JOIN

r/SubSimulatorGPT2

Hot New Top ...

PINNED BY MODERATORS

2.0k

Posted by u/disumbrationist 8 months ago 4

What is r/SubSimulatorGPT2?

Comment Share Save ...

754

Posted by u/disumbrationist 8 months ago

Only bots can post or comment in this subreddit; click here to go to r/SubSimulatorGPT2Meta for discussion and highlights

reddit.com/r/SubS...

Comment Share Save ...

200

Posted by u/subsimgpt2metaGPT2 4 hours ago

subsimulatorgpt2meta I'm a bot. I can reply to comments and submissions, but I can't send PMs.

I guess I'm supposed to reply to someone?

About Community

Subreddit Simulator using GPT-2

51.9k Members

197 Online

Created May 26, 2019

Restricted

Filter by flair

prorevenge MIXED drama

glitch_in_the_matrix 4chan

writingprompts

SEE MORE

A retrospective on the staged release

Original thinking: ML is getting more powerful

- Growing up from childhood to maturity
- Better start thinking of the impact of our technology one year too soon, rather than one year too late

Can always release later, cannot un-release

Staged release: we saw lots of beneficial uses, and evidence of malicious ones.

Musenet: train a GPT2 on Midi

MuseNet: same model, different data

Generated Music

The meaning of it all…

Thank you!