

# ChatGPT

## VCHS AI Club

HA I have a bag of apples, there are 5 apples in it, if I take 2 out of it, how many apples are left in the bag? 

AI If you have a bag with 5 apples in it and you take 2 out of it, then there will be 3 apples left in the bag. This is because  $5 - 2 = 3$ .  

HA If I take out 2 more apples, how many apples are still in the bag now? 

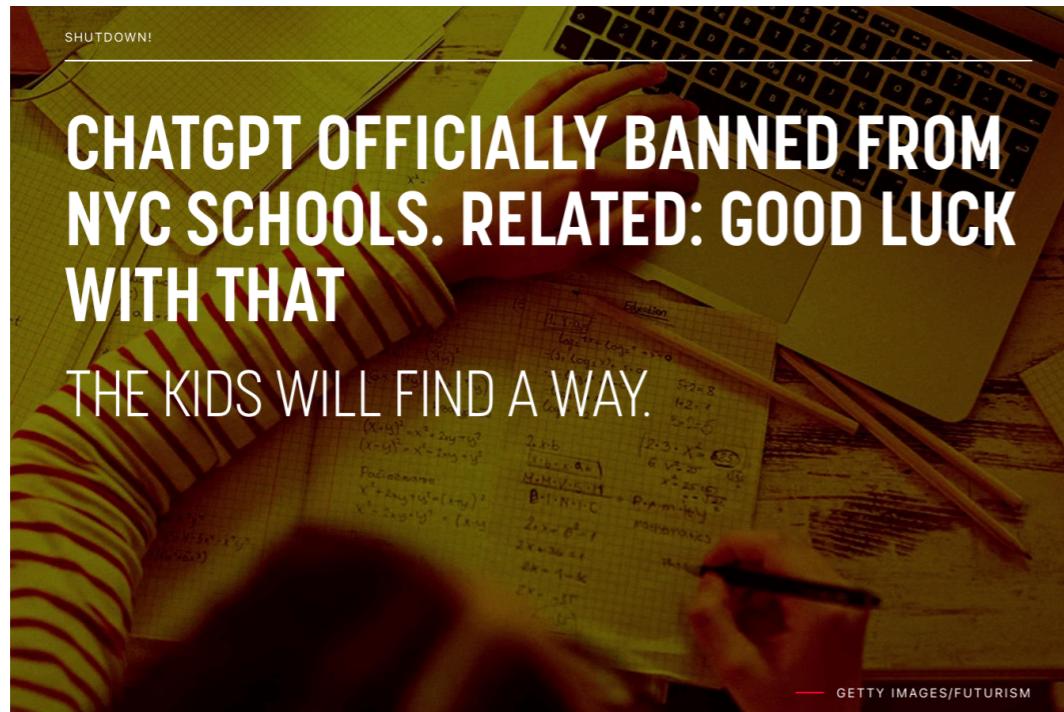
AI If you have a bag with 5 apples in it and you take 2 apples out, then there will be 3 apples left in the bag. If you take out 2 more apples, then there will be 1 apple left in the bag. This is because  $3 - 2 = 1$ .  

In total, if you take out 4 apples from a bag with 5 apples in it, then there will be 1 apple left in the bag. This is because  $5 - 4 = 1$ .

HA What if I put in 7 more? 

AI If you have a bag with 5 apples in it and you take out 4 apples, then there will be 1 apple left in the bag. If you then put in 7 more apples, then there will be 8 apples in the bag in total. This is because  $1 + 7 = 8$ .  





## ChatGPT Wrote My AP English Essay—and I Passed

Our columnist went back to high school, this time bringing an AI chatbot to complete her assignments

Joanna Stern • Dec. 21, 2022 9:00 am ET

Cheating With ChatGPT: Can an AI Chatbot Pass AP Lit?



## Here's How Forbes Got The ChatGPT AI To Write 2 College Essays In 20 Minutes

Emma Whitford Forbes Staff  
I write about K-12 and higher education.

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Dec 9, 2022, 03:18pm EST

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### ChatGPT passes the 2022 AP Computer Science A free response section

For fun, I had ChatGPT take the free response section of the 2022 AP Computer Science A exam. (The exam also has a multiple-choice section, but the College Board doesn't publish this.) It scored 32/36.

#### Methodology

- For each question, I pasted in the full text of the question and took the response given.
- I tried each question once and took the response given: no cherry-picking. For readability, I've added indentation in some cases, and included method signatures where they were provided in the question and ChatGPT only provided a body. I've added question numbers; any other comments are ChatGPT's.
- Many questions have examples containing tables or diagrams; because those don't translate well to plain text, I excluded those tables/diagrams and any text that referenced them.
- I excluded the initial instructions at the top of the exam booklet, the "Class information for this question" boxes, and instructions about where/how to write the response in the free response booklet.
- I clicked "reset thread" between each of the four numbered questions.
- For questions with a part (a) and (b), I pasted in the full question up to the end of part (a), got the response for part (a), then pasted in (in the same thread) just part (b) and got the answer to that part.
  - In one case (question 1), ChatGPT provided an implementation for both parts after just getting asked for part (a).



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*"To determine if something was written by a human or an AI, you can look for the absence of personal experiences or emotions, check for inconsistency in writing style, and watch for the use of filler words or repetitive phrases. These may be signs that the text was generated by an AI."*

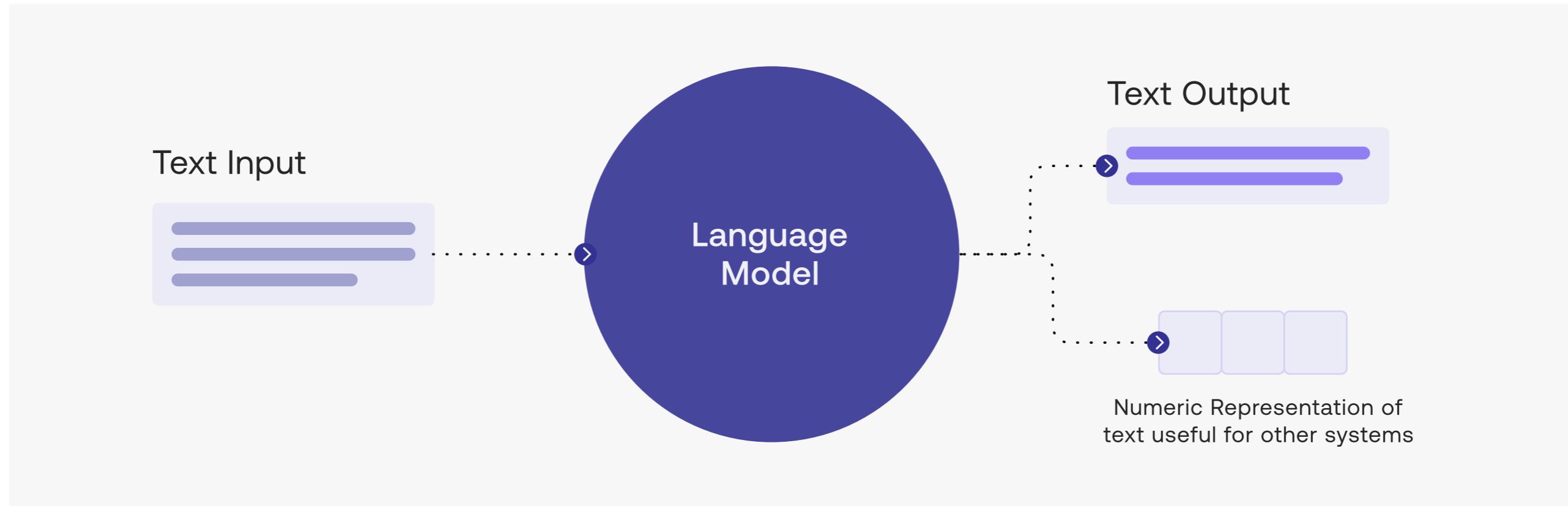
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# **What is ChatGPT?**



# What is a Large Language Model?



Mask token: [MASK]

To be or not to [MASK]. //

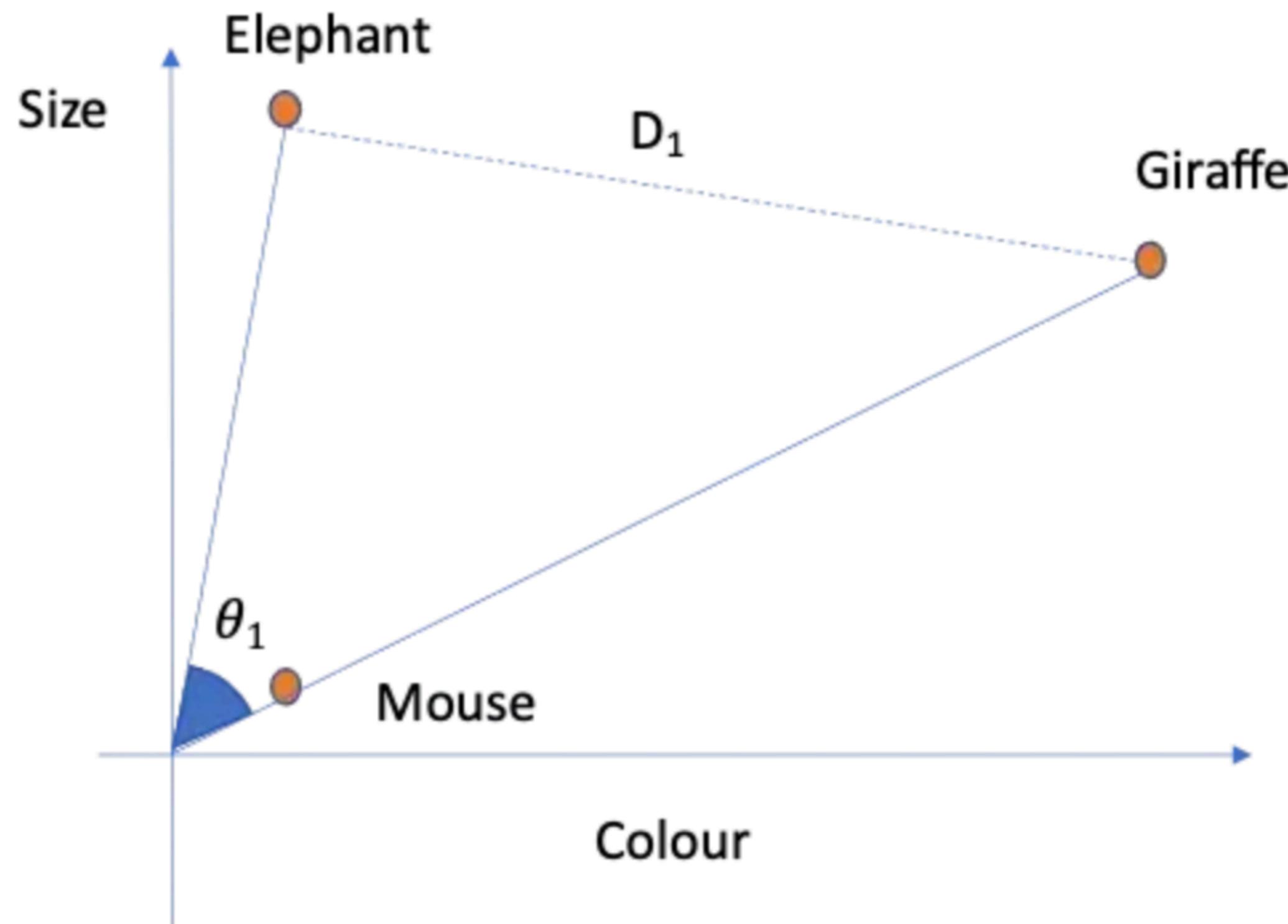
## Compute

Computation time on Intel Xeon 3rd Gen Scalable cpu: 0.037 s

be	0.986
have	0.002
do	0.001
know	0.001
love	0.000

Masked Language Modeling





Comparing some vectors in a 2D space using Euclidian and Cosine distance

**What's the  
problem?**



# What makes ChatGPT unique?

tion

you asked me a question about Post Malone. You asked me   I provided some information about his career and background. I was trained by OpenAI, and I am designed to assist with answering questions on a wide range of topics. I do not have the ability to think or reason like one. I can only provide information based on what I have been trained on.

that?

Malone, you asked me about the meaning of the term   I provided some information about this term, explaining that it originated in the United States and is often associated with agricultural fairs. I do not have the ability to remember previous interactions.



# Reinforcement Learning from Human Feedback

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The method overall consists of three distinct steps:

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1. Supervised fine-tuning step: a pre-trained language model is fine-tuned on a relatively small amount of demonstration data curated by labelers, to learn a supervised policy (the SFT model) that generates outputs from a selected list of prompts. This represents the baseline model.
  2. "Mimic human preferences" step: labelers are asked to vote on a relatively large number of the SFT model outputs, this way creating a new dataset consisting of comparison data. A new model is trained on this dataset. This is referred to as the reward model (RM).
  3. Proximal Policy Optimization (PPO) step: the reward model is used to further fine-tune and improve the SFT model. The outcome of this step is the so-called policy model.
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Step 1

**Collect demonstration data and train a supervised policy.**

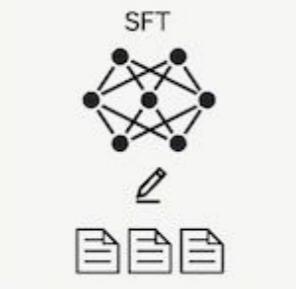
A prompt is sampled from our prompt dataset.



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.**

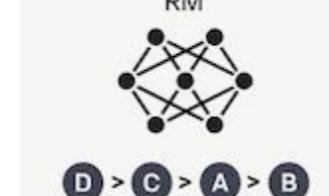
A prompt and several model outputs are sampled.



A labeler ranks the outputs from best to worst.



This data is used to train our reward model.



D > C > A > B

Step 3

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

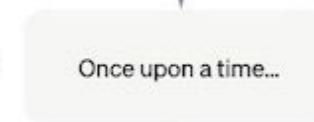
A new prompt is sampled from the dataset.



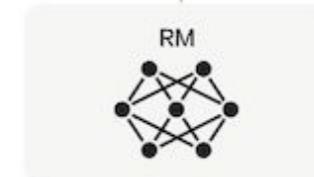
The PPO model is initialized from the supervised policy.



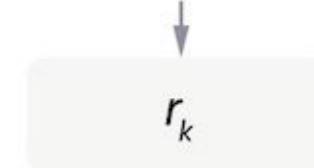
The policy generates an output.



The reward model calculates a reward for the output.



The reward is used to update the policy using PPO.



# **Performance Evaluation**



# InstructGPT

PROMPT *Explain the moon landing to a 6 year old in a few sentences.*

COMPLETION GPT-3

Explain the theory of gravity to a 6 year old.

Explain the theory of relativity to a 6 year old in a few sentences.

Explain the big bang theory to a 6 year old.

Explain evolution to a 6 year old.

InstructGPT

People went to the moon, and they took pictures of what they saw, and sent them back to the earth so we could all see them.

