

Welcome

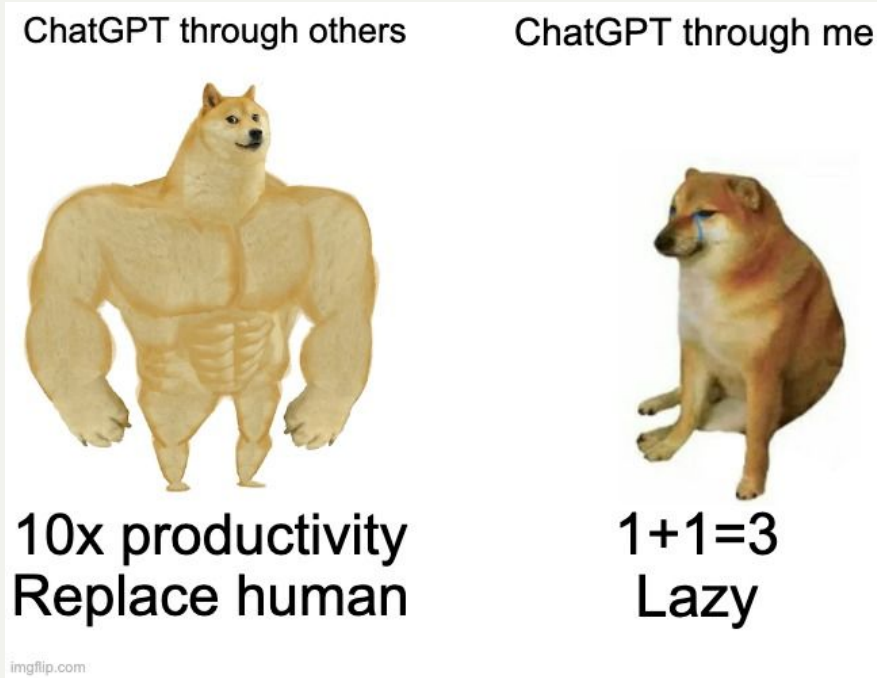
Why is your ChatGPT lazy and dumb? (and how to fix it)

Yan Wang, PhD

Staff Applied Scientist @ Samsara



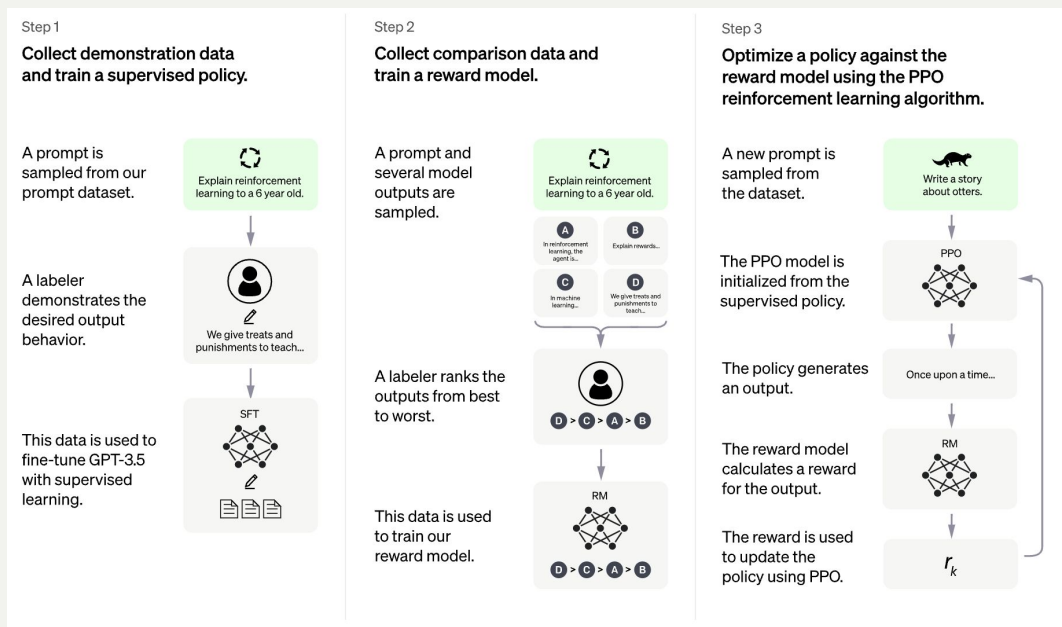
Problem – Why is my ChatGPT dumb?



Because we used it wrong

- ChatGPT is still new and flawed
- Today you will
 - understand the research behind bad performance
 - make sense of unexpected behaviors
 - learn a simple trick to improve **most tasks immediately**

ChatGPT is not a black box



ChatGPT =

Foundation model

+ Alignment

+ Prompt

+ Context window

Today's focus

Context window management makes a difference

Same model, same prompt

A simple trick turns a lazy GPT:

to

 You

I can't upload a file to cloud storage. What are my options?

 ChatGPT

If you can't upload the files to cloud storage, you could try transferring them directly between the computers using a network connection. You could set up file sharing between the computers and transfer the files over the local network. Another option is to use an external storage device like a USB flash drive or an external hard drive to physically transfer the files between the two computers.

 You

I have many files on a computer and want to copy them to another computer. What shall I do? I cannot upload the files to the cloud.

< 3 / 3 >

 ChatGPT

If you can't use cloud storage, you still have several options to transfer files between computers:

1. **External Storage Device:** Use a USB flash drive, external hard drive, or SSD to transfer files physically from one computer to another. Simply copy the files onto the storage device from one computer and then connect the device to the other computer to transfer the files.
2. **Network Transfer:** If both computers are on the same local network, you can transfer files over the network. You can use file sharing protocols like SMB (Windows File Sharing) or NFS (Network File System) to share files between computers. Alternatively, you can use software like FileZilla or WinSCP to transfer files over FTP or SFTP.
3. **Direct Connection:** You can directly connect the two computers using an Ethernet cable or a crossover cable (if they don't have Ethernet ports). Once connected, you can set up a network connection between them and transfer files.
4. **Transfer via Email or Messaging Service:** If the files are not too large, you can email them to yourself or use a messaging service that allows file attachments. This method is not efficient for large amounts of data or large files due to email size limitations.
5. **Transfer via External Media:** Burn the files onto a CD or DVD if both computers have optical drives.
6. **Transfer via Bluetooth:** If both computers have Bluetooth capability, you can pair them and transfer files wirelessly.

Choose the method that best suits your needs and the resources available to you.

Context window

Introduced in the original GPT paper, and has its meaning derived along with time.

3.1 Unsupervised pre-training

Given an unsupervised corpus of tokens $\mathcal{U} = \{u_1, \dots, u_n\}$, we use a standard language modeling objective to maximize the following likelihood:

$$L_1(\mathcal{U}) = \sum_i \log P(u_i | u_{i-k}, \dots, u_{i-1}; \Theta) \quad (1)$$

where k is the size of the context window, and the conditional probability P is modeled using a neural network with parameters Θ . These parameters are trained using stochastic gradient descent [51].

Radford, Alec, et al. "Improving language understanding by generative pre-training." (2018)

It's what ChatGPT sees when generating responses.

Context window



You

I have many large files to copy from one computer to another computer. What should I do?



ChatGPT

There are a few options depending on your setup. You could use an external hard drive or a USB flash drive to transfer the files. Alternatively, you could use a network file transfer protocol like FTP or SCP if both computers are connected to the same network. If the files are too large for those methods, you might consider using cloud storage services or specialized file transfer tools.



Chat is appending to context window

 **You**

I have many large files to copy from one computer to another computer. What should I do?

 **ChatGPT**

There are a few options depending on your setup. You could use an external hard drive or a USB flash drive to transfer the files. Alternatively, you could use a network file transfer protocol like FTP or SCP if both computers are connected to the same network. If the files are too large for those methods, you might consider using cloud storage services or specialized file transfer tools.

 **You**

I can't upload a file to cloud storage. What are my options?

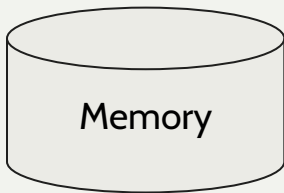
 **ChatGPT**

If you can't upload the files to cloud storage, you could try transferring them directly between the computers using a network connection. You could set up file sharing between the computers and transfer the files over the local network. Another option is to use an external storage device like a USB flash drive or an external hard drive to physically transfer the files between the two computers.



How ChatGPT works

Common misconception



User: But I cannot upload the files to the cloud. What shall I do?

Actual case

User: How can I transfer my files from one computer to another?

Assistant: <response>

User: But I cannot upload the files to the cloud. What shall I do?

ChatGPT implements memory by appending chat history to the context window

Two key limits of context windows

- It's **finite**
 - ChatGPT forgets about things

User: Write a python program. I cannot use numpy.

Assistant: <long response with code>

User: Can you change it to do A?

Assistant: <long response with code>

... ..

User: Add B feature.

Assistant: <long response with code>

User: Change the code to also do C.

Assistant: import numpy

... ..

Two key limits of context windows

- It has difficulties processing **long or unorganized content**
 - ChatGPT misses requirements / details
 - Difficulty in recognizing requirements and assigning weights

User: Write a python program. I cannot use numpy.

Assistant: <long response with code>

User: Can you change it to do A?

Assistant: <long response with code>

User: Add B feature.

Assistant: <long response with code>

User: Change the code to also do C.

Assistant: <code doing A and C>

ChatGPT has a problem

- It's too easy to get a messy context window
 - Requirements scattered everywhere
 - Long bad / useless history responses

User: Write a python program. I cannot use numpy.

Assistant: <long response with code>

User: Can you change it to do A?

Assistant: <long response with code>

User: Add B feature.

Assistant: <long response with code>

User: Change the code to also do C.

The problem will only become worse

- Natural reaction: chat more to correct it
- Make things worse

User: Write a python program. I cannot use numpy.

Assistant: <long response with code>

User: Can you change it to do A?

Assistant: <long response with code>

User: Add B feature.

Assistant: <long response with code>

User: Change the code to also do C.

Assistant: <long response with code>

User: You forget A.

That why AI becomes dumb

- Chat = appending in context window
- More chat ends up with a messy context window
- Cannot fix with first reaction -- chat more

Solution: training

Context window management



**LOW
EFFORT**



Succinct

User: Write a python program. I cannot use numpy.

Assistant: <long response with code>

User: Can you change it to do A?

Assistant: <long response with code>

User: Add B feature.

Assistant: <long response with code>

User: Change the code to also do C.

Assistant: <long response with code>

User: You forget A.



User: Write a python program to do A, B, and C. I cannot use numpy.



Edit, not chat

Chat:

Save & Submit



You

I can't upload a file to cloud storage. What are my options?



ChatGPT

If you can't upload the files to cloud storage, you could try transferring them directly between the computers using a network connection. You could set up file sharing between the computers and transfer the files over the local network. Another option is to use an external storage device like a USB flash drive or an external hard drive to physically transfer the files between the two computers.

Edit, not chat

Edit

GR

You

I have many files on a computer and want to copy them to another computer. What shall I do? I cannot upload the files to the cloud.

< 3/3 >



ChatGPT

If you can't use cloud storage, you still have several options to transfer files between computers:

1. **External Storage Device:** Use a USB flash drive, external hard drive, or SSD to transfer files physically from one computer to another. Simply copy the files onto the storage device from one computer and then connect the device to the other computer to transfer the files.
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6. **Transfer via Bluetooth:** If both computers have Bluetooth capability, you can pair them and transfer files wirelessly.

Choose the method that best suits your needs and the resources available to you.



Edit, not chat

Chat



You

I am copying the files from a Mac to a PC. What is the recommended approach?



ChatGPT

For transferring files from a Mac to a PC, you have a few options:

1. **External Drive:** Use an external hard drive or a USB flash drive to copy the files from the Mac and then plug it into the PC to transfer the files.
2. **Network Sharing:** Set up file sharing between the Mac and PC over the same network. You can enable file sharing on both computers and then access the shared folders to copy the files.
3. **Cloud Storage:** While you mentioned you can't upload to cloud storage, if it's an option on the Mac, you could upload the files to a cloud service accessible from both computers and then download them on the PC.
4. **Direct Connection:** You can use a direct connection method like Ethernet or a crossover Ethernet cable to connect the Mac and PC directly and transfer the files.

Each method has its pros and cons, so choose the one that suits your situation best.



Edit, not chat

Edit



You

I have many files on a computer and want to copy them to another computer. What shall I do? I cannot upload the files to the cloud. I'm copying the files from a Mac to a PC.

< 5 / 5 >



ChatGPT

You have a few options for transferring files from a Mac to a PC without using cloud storage:

1. **External Hard Drive or USB Flash Drive:** Copy the files onto an external hard drive or USB flash drive from your Mac. Then, connect the external drive to your PC and transfer the files onto it.
2. **Network Sharing:** Connect both computers to the same network (via Ethernet cable or Wi-Fi). Enable file sharing on both computers and then access the Mac's files from the PC or vice versa. You can typically do this through the system preferences on Mac and the Network settings on PC.
3. **Direct Connection:** You can use an Ethernet cable to directly connect the Mac and PC. Once connected, you can enable file sharing or use a direct transfer method between the two computers.
4. **Transfer via Email or Messaging:** If the files are not too large, you can email them to yourself or use a messaging app to transfer them from the Mac to the PC.
5. **Transfer via External Media:** If both computers have CD/DVD drives, you can burn the files onto a disc from the Mac and then use it on the PC.

Choose the method that best suits your preferences and the resources you have available.

Why did it work?

Chat

- Requirements scattered everywhere - "intelligence" wasted on recognizing requirements
- ChatGPT's imperfect/incorrect answer becomes a (major) part of context – waste of context window

Edit

- Clearly organized requirements – more "intelligence" allocated to solving the problem
- Only contains relevant information - efficient use of context window
- Same ease of use
- Bonus: always ready to reuse

Good example of training

- Understand internal mechanism
- Make sense of unexpected behaviors
- Learn about best practices
- Form a habit

ChatGPT through others



10x productivity
Replace human

imgflip.com

ChatGPT through me



1+1=3
Lazy



Next two cohorts sold out
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This course not only teaches me many best practices and techniques of Generative AI but also, more importantly, conveys mindsets that can be leveraged in both work and life. The high quality of this course reflects the instructors' expertise and dedication in preparing the materials.



Jason

COHORT 1

Software engineer
Zuora



YZ and Yan provided excellent course materials and lectures. They tailored their instructions to address students' specific questions. I highly recommend this course to anyone looking to use AI to enhance their productivity and achieve more. Make sure to review the course materials and start thinking about the project you want to develop before the course to get more out of it.

Howard

COHORT 1



I really like this course. It taught me how to use GenAI to speed up daily repeated tasks by coding along with several great mindsets. I think the course is worth the price and I will highly recommend it.



Linyan

COHORT 1

Research Programmer
Henry Ford Health



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