

LLM 性能对比实验

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一、 摘要

本文选取了 YouChat、ChatGPT 和 Bard 三个 LLM 模型，通过文本分类、情感分类、问答系统等几类下游任务，设计了不同的提示工程对其进行性能分析。结果表明，这三个模型在不同的领域各有优劣，同时发现三者都具备一定的推理、归纳、演绎的能力。

二、 大语言模型

大语言模型（英文：Large Language Model，缩写 LLM），也称大型语言模型，是一种人工智能模型，旨在理解和生成人类语言。它们在大量的文本数据上进行训练，可以执行广泛的任務，包括文本总结、翻译、情感分析等等。LLM 的特点是规模庞大，包含数十亿的参数，帮助它们学习语言数据中的复杂模式。这些模型通常基于深度学习架构，如转化器，这有助于它们在各种 NLP 任务上取得令人印象深刻的表现。

在人们不断的探索过程中，其主要涌现了如下三个能力：

1. **上下文学习。**例如前不久 OpenAI 发布的 GPT-3 正式引入了上下文学习能力：假设语言模型已经提供了自然语言指令和多个任务描述，它可以通过完成输入文本的词序列来生成测试实例的预期输出，而无需额外的训练或梯度更新。
2. **指令遵循。**通过对自然语言描述（即指令）格式化的多任务数据集的混合进行微调，LLM 在微小的任务上表现良好，这些任务也以指令的形式所描述。这种能力下，指令调优使 LLM 能够在不使用显式样本的情况下通过理解任务指令来执行新任务，这可以大大提高泛化能力。
3. **循序渐进的推理。**对于小语言模型，通常很难解决涉及多个推理步骤的复杂任务，例如数学学科单词问题。同时，通过思维链推理策略，LLM 可以通过利用涉及中间推理步骤的 prompt 机制来解决此类任务得出最终答案。据推测，这种能力可能是通过代码训练获得的。

在本次的实验中，采用的大型语言模型有如下三个：基于 OpenAI 公司推出的 GPT-3.5

搭建的 ChatGPT 聊天模型、基于 RNN 循环神经网络的 YouChat 模型以及基于 LaMDA 搭建的 Bard 模型。

GPT-3.5 基于 Transformer 自适应注意力机制形成的自然语言模型，ChatGPT 模型和以往不同在于，加入了强化学习训练机制，这导致模型训练更加高效、准确。强化学习主要是在模仿人类沟通中的对话机制，通过人工针对模型每一次迭代的不同输出进行一个打分，形成奖惩模型 reward，引导 ChatGPT 一步步说出正确的话，具备逻辑推理能力，最终形成一个具有 175B 参数的巨大人工大脑。

YouChat 模型基于 RNN（循环神经网络）和注意力机制（Attention Mechanism）来实现，其基本原理是将输入的自然语言文本序列转换为一个潜在的向量表示，然后利用该向量表示生成对应的回复文本序列。在生成过程中，注意力机制可以帮助模型更好地关注输入文本序列的不同部分，从而提高生成回复的准确性和流畅性。

Bard 模型谷歌基于 LaMDA 得到的一种神经网络的语言模型，其基本原理是使用深度学习算法，通过对大量文本数据进行训练，从而预测下一个可能出现的单词或词组。该模型采用了一种双向循环神经网络（BiRNN）结构，可以同时考虑前后文信息，从而提高预测准确率。此外，Bard 模型还采用了残差连接和门控机制等技术，进一步提升了模型的性能。

三、 提示工程（Prompt）

提示工程通过设计和构建输入提示来控制大语言模型的输出，从而提高生成文本的准确性和可靠性，为各种应用场景提供更好的效果和体验。因此，提示工程的背景和意义在于优化输入提示，引导大语言模型生成更加准确、可靠、符合预期的输出文本，从而更好地发挥其优势和价值。下面举例三个主题：

1. 零样本提示(Zero-shot Prompting)

零样本意味着提示模型，而不显示任何来自模型的预期行为示例。如下所示

Prompt:

将文本分为中性、否定或肯定三类。

文本：我觉得假期还可以。

*Completion:*分类： 中性

Prompt:

文本: 我觉得他表现相当好

*Completion:*分类: 肯定

Prompt:

文本: 我觉得他表现不咋地

*Completion:*分类: 否定

上述提示中我们没有向模型提供任何示例--这就是零样本能力在发挥作用。当零样本无法发挥作用时, 建议在提示中提供演示或示例。

2. 少量样本提示(Few-shot Prompting)

尽管大型语言模型已经展示了卓越的零样本能力, 但在使用零样本设置时, 它们在更复杂的任务上仍然存在局限性。为了改进这一点, 我们使用了一种名为少量样本提示(few-shot prompting)的技术, 以在上下文中提供演示来引导模型实现更好的性能。演示作为后续示例的条件, 帮助模型生成回应。例如:

Prompt:

巴黎是法国的首都, 有艾菲尔铁塔、卢浮宫和香榭丽舍大道等著名景点。

纽约是美国的一座大城市, 拥有自由女神像、时代广场和中央公园等著名景点。

东京是日本的首都, 有天空树、浅草寺和新宿御苑等著名景点。

北京是?

*Completion:*北京是中国的首都, 有故宫、长城和天坛等著名景点。

Prompt:

上海是?

*Completion:*上海是中国的一座城市, 是中国经济、金融、贸易和交通中心之一, 有外滩、东方明珠和豫园等著名景点。

Prompt:

假设你是一位房地产经纪人, 请编写一则广告来出售下面这套房子。

房子位于繁华商业区, 周围有多个购物中心和美食街, 距离地铁站步行仅需 5 分钟。房子建于 2015 年, 共有三间卧室和两间浴室, 带有一个宽敞的客厅和一个带有吧台的开放式厨房。该房子总面积为 120 平方米, 可以提供一辆车的停车位。

*Completion:*精致的三居室, 完美的位置和细致入微的内部设计使这套房子成为您理想的居住场所。位于商业区心脏地带, 周围设施齐全, 满足您所有的购物和饮食需求。房子建于

2015 年，每个房间都配有大窗户，自然光线充足，带来温馨明亮的生活氛围。您将拥有一个宽敞的客厅，以及带有吧台的开放式厨房，为您的聚会和娱乐提供最佳场所。另外，房子还配有一个车位，方便您的出行。这是您不容错过的机会，立即联系我们，预约看房！

该模型仅通过提供一个示例（即 1-shot）就以某种方式学会了如何执行任务。对于更困难的任务，我们可以尝试增加演示（例如，3-shot、5-shot、10-shot 等）。

3. 思维链提示（Chain-of-Thought Prompting）

思想链 (CoT) 提示通过中间推理步骤启用复杂的推理能力。我们也可以将它与少量提示结合使用，以便在响应前需要推理的更复杂任务中获得更好的结果。举例如下：

Prompt:

煮一个鸡蛋需要 2 分钟，煮 5 个鸡蛋需要几分钟？

Completion:

煮一个鸡蛋需要 2 分钟，因此煮 5 个鸡蛋所需的时间是 5 个鸡蛋的煮时间之和。所以煮 5 个鸡蛋需要 $5 \times 2 = 10$ 分钟。答案是 10 分钟。

Prompt:

考虑一下并行一起情况：

煮一个鸡蛋需要 2 分钟，煮 5 个鸡蛋需要几分钟？

Completion:

如果要同时煮 5 个鸡蛋，可以采用并行的方式，也就是同时在不同的锅里煮鸡蛋。这样，时间可以缩短，因为每个锅里只需要煮一个鸡蛋，所以煮 5 个鸡蛋的时间应该等于煮一个鸡蛋的时间，也就是 2 分钟。因此，同时煮 5 个鸡蛋需要 2 分钟。

可以看到，随着不断进行思维链提示过程，模型能够展现其解决基本逻辑问题的能力，这是一种随着足够大的语言模型而出现的新兴能力。

四、 下游任务

下游任务是指应用在文本数据上的具体任务，旨在从文本中提取有用的信息或实现特定的功能。主要有以下任务：文本分类、信息抽取、机器翻译、问答系统、文本生成、文本聚类 and 相似度计算、情感分析、文本摘要和情感生成。

五、 实验过程

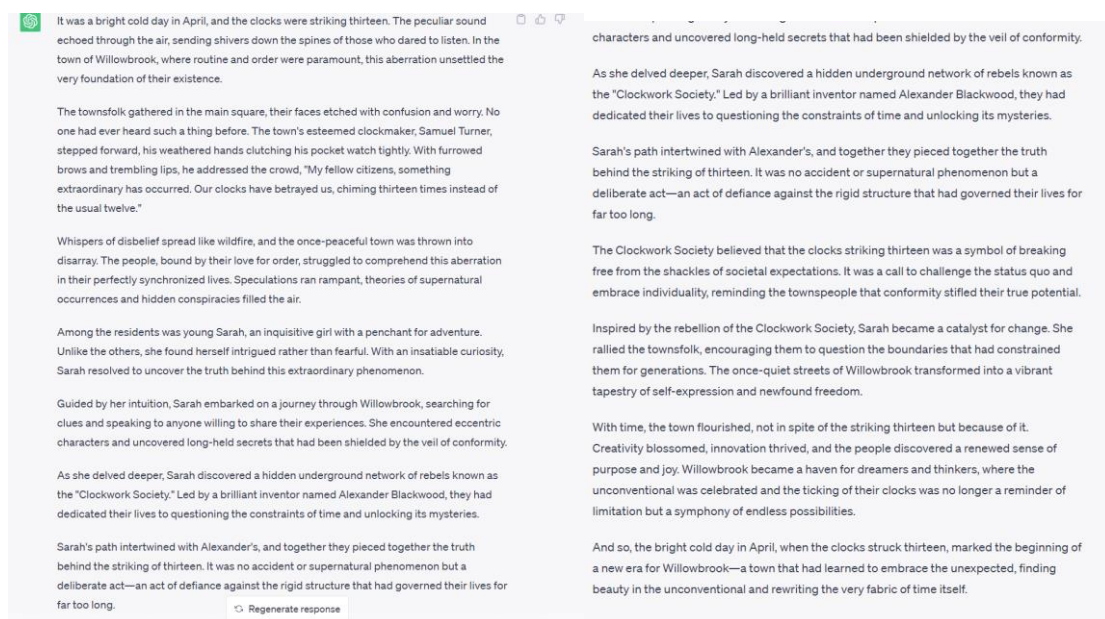
对于三个 LLM 模型：YouChat、ChatGPT、选取下游任务如下：给定一段提示词，生成一段文本；给定一段文字，在有一定约束条件下概括其中心含义；给定一段逻辑文字，进行逻辑推理得到结果。

1. 生成文本：

设计提示词如下所示：

I give you a sentence that is the beginning of a story, then you need to generate a complete story based on that sentence. This sentence is “It was a bright cold day in April, and the clocks were striking thirteen.”

ChatGPT 生成文本如下：



翻译如下所示：

那是四月寒冷的一天，时钟敲了十三下。 奇异的声音在空气中回荡，让敢听之人脊背发凉。 在 Willowbrook 镇，例行公事和秩序至高无上，这种反常行为动摇了他们生存的根基。

镇民们聚集在主广场上，脸上写满了困惑和担忧。 以前没有人听说过这样的事情。 镇上受人尊敬的钟表匠塞缪尔·特纳走上前来，他那双饱经风霜的双手紧紧抓着怀表。 他皱着眉头，嘴唇颤抖着对人群说：“我的同胞们，发生了一些不寻常的事情。我们的时钟出卖了我们，报时十三次，而不是通常的十二次。”

难以置信的窃窃私语像野火一样蔓延开来，曾经平静的小镇陷入了混乱。 人们被他们对秩序的热爱

所束缚，努力在他们完美同步的生活中理解这种失常。 猜测猖獗，超自然事件和隐藏阴谋的理论弥漫在空气中。

居民中有年轻的莎拉，一个好奇的女孩，喜欢冒险。 与其他人不同，她发现自己很感兴趣而不是害怕。 怀着永不满足的好奇心，莎拉决心揭开这一非凡现象背后的真相。

在直觉的指引下，莎拉踏上了穿越威洛布鲁克的旅程，寻找线索并与任何愿意分享经历的人交谈。 她遇到了古怪的人物，并揭开了长期以来被一致面纱所掩盖的秘密。

随着她深入研究，莎拉发现了一个隐藏的地下反叛网络，称为“发条协会”。 在一位名叫亚历山大·布莱克伍德的杰出发明家的带领下，他们毕生致力于质疑时间的局限性并解开它的奥秘。

莎拉的道路与亚历山大的道路交织在一起，他们一起拼凑出十三击背后的真相。 这不是意外或超自然现象，而是一种蓄意行为——一种对长期以来支配他们生活的僵化结构的蔑视行为。

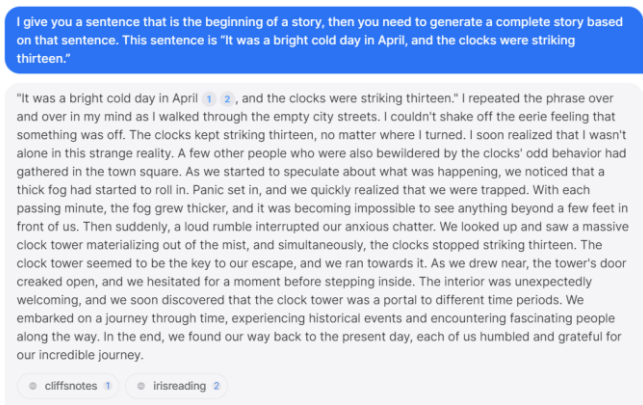
发条协会认为，钟敲十三下是摆脱社会期望束缚的象征。 这是挑战现状和拥抱个性的号召，提醒市民从众会扼杀他们的真正潜力。

受到发条协会叛乱的启发，莎拉成为变革的催化剂。 她召集市民，鼓励他们质疑世代限制他们的界限。 Willowbrook 曾经安静的街道变成了充满活力的自我表达和新发现的自由的挂毯。

随着时间的流逝，这个小镇繁荣起来，这并不是因为十三的敲击，而是因为它。 创造力绽放，创新蓬勃发展，人们发现了新的使命感和快乐感。 Willowbrook 成为梦想家和思想家的天堂，在这里庆祝非常规，他们的时钟滴答声不再是限制的提醒，而是无限可能性的交响乐。

因此，在 4 月那个明亮寒冷的日子里，当时钟敲响十三下时，标志着威洛布鲁克新时代的开始——这个小镇学会了拥抱意想不到的事物，在非常规中发现美，并改写了时间本身的结构。

YouChat 的生成文本如下所示：



翻译如下所示：

那是四月里一个明亮寒冷的日子，时钟敲了十三下。” 当我走过空荡荡的城市街道时，我在脑海中一遍遍地重复着这句话。我无法摆脱一种不对劲的怪异感觉。无论我转向哪里，时钟都一直敲着十三下。我

很快意识到在这个奇怪的现实中我并不孤单。其他一些人也对时钟的奇怪行为感到困惑，他们聚集在城镇广场。当我们开始时 为了推测发生了什么，我们注意到浓雾已经开始翻滚。恐慌袭来，我们很快意识到我们被困住了。随着时间的流逝，雾越来越浓，越来越看不见任何东西 就在我们前面几英尺之外。突然，一声巨响打断了我们焦急的喋喋不休。我们抬头一看，一座巨大的钟楼从雾气中显现出来，同时，时钟停止敲响十三下。钟楼似乎是我们逃跑的钥匙，我们朝它跑去。当我们走近时，塔的门吱呀一声打开了，我们犹豫了片刻才走进去。内部出乎意料的温馨，我们很快发现钟楼是通往不同时期的门户。我们踏上了穿越时空的旅程，一路上经历了历史事件，遇到了迷人的人。最后，我们找到了回到今天的路，我们每个人都为这段不可思议的旅程感到谦卑和感激。

Bard 生成文本如下：

I give you a sentence that is the beginning of a story, then you need to generate a complete story based on that sentence. This sentence is "The clocks were striking thirteen."

Sure, here is a story I generated based on the sentence "The clocks were striking thirteen."

The clocks were striking thirteen. It was a strange and unsettling feeling, and I couldn't help but feel like something was wrong. I looked around, but everything seemed normal. The people were going about their business, the cars were driving by, and the birds were singing. But there was still that feeling of unease, like something was about to happen.

I walked down the street, trying to shake the feeling. But it wouldn't go away. I turned a corner and saw a man standing on the corner. He was wearing a long black coat and a hat that obscured his face. He was staring at me, and I felt a chill run down my spine.

I quickly walked past him, but I could feel his eyes following me. I turned another corner and saw a group of people gathered around a fire. They were talking and laughing, but they all looked up when I walked by. They all had the same strange look in their eyes, like they knew something I didn't.

I started to run. I didn't know where I was going, but I had to get away. I ran down the street, turning corners and weaving through the crowds. I could hear the clocks still striking thirteen, and I knew that I was running out of time.

I finally came to a dead end. There was a wall in front of me, and I couldn't go any further. I turned around and saw the man in the black coat standing in front of me. He was still wearing the hat that obscured his face, but I could see his eyes. They were cold and dark, and they filled me with fear.

The man raised his hand, and I felt a sharp pain in my chest. I fell to the ground, gasping for breath. The man took a step towards me, and I knew that I was going to die.

Enter a prompt here

Bard may display inaccurate or offensive information that doesn't represent Google's views.

"Stop!"

The man turned around, and I saw a young woman standing behind him. She was wearing a white dress, and her hair was long and flowing. She had a kind face, and her eyes were filled with compassion.

"You can't do this," she said. "He's not worth it."

The man looked at the woman, and I could see the anger in his eyes. But then, he seemed to think better of it. He turned and walked away, disappearing into the crowd.

The woman came over to me and helped me to my feet.

"Are you okay?" she asked.

I nodded. I was still in shock, but I was alive.

"Thank you," I said. "I don't know what I would have done if you hadn't been there."

The woman smiled. "You're welcome," she said. "I'm just glad I could help."

I never saw the woman again, but I'll never forget her. She saved my life, and I'll be forever grateful.

I turned and walked away, still feeling shaken. But as I walked, I felt a sense of peace. I knew that everything was going to be okay.

The clocks were still striking thirteen, but they didn't sound so strange anymore. They sounded like a new beginning.

Enter a prompt here

Bard may display inaccurate or offensive information that doesn't represent Google's views.

翻译如下：

钟敲了十三下。 这是一种奇怪而不安的感觉，我忍不住觉得哪里不对劲。 我环顾四周，但一切似乎都很正常。 人们在忙碌着，汽车在驶过，鸟儿在歌唱。 但心里还是有种不安的感觉，就好像有什么事情

要发生一样。

我走在街上，试图摆脱这种感觉。但它不会消失。我转过一个拐角，看见一个男人站在拐角处。他穿着一件黑色长外套，戴着一顶遮住脸的帽子。他盯着我看，我感到脊背发凉。

我快步从他身边走过，但我能感觉到他的目光一直跟着我。我转过另一个拐角，看到一群人围着一堆火堆。他们有说有笑，但当我经过时，他们都抬起头来。他们的眼中都流露出同样奇怪的神情，就好像他们知道一些我不知道的事情。

我开始奔跑。我不知道我要去哪里，但我必须离开。我跑到街上，拐弯，穿过人群。我能听到时钟还在敲十三下，我知道时间不多了。

我终于走到了死胡同。我面前有一堵墙，我不能再往前走了。我一转身，就看到站在我面前的黑衣人。他还戴着遮住脸的帽子，但我能看到他的眼睛。它们又冷又黑，让我充满了恐惧。

男人抬起手，我感到胸口一阵剧痛。我倒在地上，喘着粗气。那人朝我走了一步，我知道我快要死了。

但就在这时，我听到了一个声音。

“停止！”

男人转身，只见身后站着一个年轻女子。她身穿白色连衣裙，长发飘逸。她长着一张慈祥的脸，眼里满是慈悲。

“你不能这样做，”她说。“他不值得。”

男人看着女人，我能看到他眼底的怒意。但后来，他似乎想好了。他转身就走，消失在人群中。

那个女人走到我身边，扶我站起来。

“你还好吗？”她问。

我点了头。我仍然很震惊，但我还活着。

“谢谢你，”我说。“如果你不在，我不知道我会做什么。”

女人笑了。“不客气，”她说。“我很高兴能帮上忙。”

我再也没有见过那个女人，但我永远不会忘记她。她救了我的命，我将永远感激不已。

我转身走开，仍然感到震惊。但是当我走的时候，我感到一种平静的感觉。我知道一切都会好起来的。

钟还在敲十三下，但听起来已经不那么奇怪了。他们听起来像是一个新的开始。

总结：

可以看到，ChatGPT 和 Bard 都能生成长文，但是与此相对基于 RNN 的小模型 Youchat 就不能生成一个长文，同时 ChatGPT 在故事性上更加丰富一点，Bard 生成的文本

有点不明所以，缺乏精彩故事性。

2. 概括内容

给定的提示词如下所示:

I need you to summarize the following document. The document is "Visitors from 108 countries and regions, along with thousands of delegations from China and the rest of the world, gathered in Shenzhen, Guangdong province, on Wednesday for the opening of China's largest cultural exhibition.

The 19th China (Shenzhen) International Cultural Industries Fair, which will run through Sunday, has attracted nearly 3,600 government delegations, cultural institutions and enterprises, including over 300 overseas exhibitors from 50 countries and regions, to showcase their cultural products and seek business opportunities.

Over 20,000 visitors from 108 countries and regions have registered for the event, according to the fair's organizer. The numbers of overseas exhibitors and visitors have returned to pre-COVID levels, the organizer said.

The five-day fair covers 120,000 square meters at the Shenzhen World Exhibition and Convention Center, the event's main offline venue. There are also 65 branch venues across the city.

The organizer has set up six exhibition halls featuring digital culture, cultural development of the Guangdong-Hong Kong-Macao Greater Bay Area, cultural and tourism consumption, and intangible cultural heritage.

A total of 100,000 types of cultural products, such as books, costumes and handicrafts, and 40,000 cultural development projects will be showcased at the fair."

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The 19th China (Shenzhen) International Cultural Industries Fair has opened in Shenzhen, Guangdong province, attracting thousands of delegations from China and around the world. The event has nearly 3,600 government delegations, cultural institutions and enterprises, including over 300 overseas exhibitors from 50 countries and regions. Over 20,000 visitors from 108 countries and regions have registered for the event, and the numbers of overseas exhibitors and visitors have returned to pre-COVID levels. The five-day fair covers 120,000 square meters at the Shenzhen World Exhibition and Convention Center, with six exhibition halls featuring digital culture, cultural development of the Guangdong-Hong Kong-Macao Greater Bay Area, cultural and tourism consumption, and intangible cultural heritage. A wide range of cultural products will be showcased at the fair, including books, costumes, handicrafts, and cultural development projects.

翻译如下：

第十九届中国（深圳）国际文化产业博览会在广东省深圳市开幕，吸引了来自中国和世界各地的数千个代表团。本次盛会有近 3600 个政府代表团、文化机构和企业参会，其中包括来自 50 个国家和地区的 300 多家海外展商。来自 108 个国家和地区的超过 20,000 名观众报名参加了此次活动，海外展商和观众数量已恢复到 COVID 之前的水平。为期五天的展会在深圳国际会展中心展出 120,000 平方米，设有六个展馆，分别以数字文化、粤港澳大湾区文化发展、文化和旅游消费、非物质文化遗产为主题。展会上将展出范围广泛的文化产品，包括书籍、服饰、手工艺品和文化发展项目。

YouChat:

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The 19th China (Shenzhen) International Cultural Industries Fair has opened in Shenzhen, Guangdong province with over 20,000 visitors from 108 countries and regions attending. The event, which runs for five days, will host nearly 3,600 government delegations, cultural institutions and enterprises showcasing their cultural products and seeking business opportunities. Among the exhibitors are over 300 overseas exhibitors from 50 countries and regions. The event covers 120,000 square meters with six exhibition halls featuring digital culture, development of the Guangdong-Hong Kong-Macao Greater Bay Area, cultural and tourism consumption, and intangible cultural heritage. A total of 100,000 types of cultural products and 40,000 cultural development projects will be showcased at the fair. The organizer reports that the numbers of overseas exhibitors and visitors have returned to pre-COVID levels.

翻译如下：

第十九届中国（深圳）国际文化产业博览会在广东省深圳市开幕，来自 108 个国家和地区的 2 万余名观众参展。为期五天的活动将接待近 3,600 个政府代表团、文化机构和企业展示他们的文化产品并寻求商机。参展商中有来自 50 个国家和地区的 300 多家境外展商。活动总面积 12 万平方米，设数字文化、粤港澳大湾区建设、文旅消费、非遗等六大展馆。届时将展出 10 万种文化产品和 4 万个文化发展项目。组织者报告说，海外参展商和参观者的数量已恢复到 COVID 之前的水平。

Bard:

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A total of 100,000 types of cultural products, such as books, costumes and handicrafts, and 40,000 cultural development projects will be showcased at the fair."

◆ Sure, here is a summary of the document:

The 19th China (Shenzhen) International Cultural Industries Fair (ICIF) was held in Shenzhen, Guangdong province, from June 7 to 11, 2023. The fair attracted nearly 3,600 government delegations, cultural institutions and enterprises, including over 300 overseas exhibitors from 50 countries and regions. Over 20,000 visitors from 108 countries and regions also attended the fair.

The fair covered 120,000 square meters at the Shenzhen World Exhibition and Convention Center, the event's main offline venue. There were also 65 branch venues across the city. The organizer set up six exhibition halls featuring digital culture, cultural development of the Guangdong-Hong Kong-Macao Greater Bay Area, cultural and tourism consumption, and intangible cultural heritage.

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A total of 100,000 types of cultural products, such as books, costumes and handicrafts, and 40,000 cultural development projects were showcased at the fair. The fair was a great opportunity for businesses to showcase their products and services, find new partners, and expand into new markets.

Here are some of the highlights of the fair:

- **Digital culture:** The digital culture exhibition hall showcased the latest achievements in China's digital culture industry, including virtual reality, augmented reality, and artificial intelligence.
- **Cultural development of the Guangdong-Hong Kong-Macao Greater Bay Area:** The cultural development of the Guangdong-Hong Kong-Macao Greater Bay Area exhibition hall showcased the cultural resources of the three regions and promoted cultural cooperation between them.
- **Cultural and tourism consumption:** The cultural and tourism consumption exhibition hall showcased the latest trends in cultural and tourism consumption and provided opportunities for businesses to cooperate.
- **Intangible cultural heritage:** The intangible cultural heritage exhibition hall showcased China's rich intangible cultural heritage and promoted its protection and inheritance.

The 19th ICIF was a successful event that promoted the development of China's cultural industry and provided a platform for cultural exchanges between China and the world.

Google it

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翻译如下：

当然，这里是文档的摘要：

2023年6月7日至11日，第十九届中国（深圳）国际文化产业博览会（文博会）在广东省深圳市举办。本届展会吸引了近3600个政府代表团、文化机构和企业参会，其中包括来自50个国家的300多家境外展商。和地区。来自108个国家和地区的20,000多名观众也参加了展会。

本次展会在深圳国际会展中心举办，占地面积达120,000平方米。全市还有65个分会场。主办方设置了数字文化、粤港澳大湾区文化发展、文旅消费、非遗等六大展厅。

本届博览会共展出图书、服饰、工艺品等10万种文化产品和4万个文化发展项目。该展会是企业展示其产品和服务、寻找新合作伙伴和开拓新市场的绝佳机会。

以下是展会的一些亮点：

- **数字文化：**数字文化展厅展示了中国数字文化产业的最新成果，包括虚拟现实、增强现实、人工智能等。
- **粤港澳大湾区文化建设：**粤港澳大湾区文化建设展馆展示三地文化资源，促进三地文化合作。
- **文旅消费：**文旅消费展厅展示文旅消费最新动态，为商家提供合作机会。
- **非物质文化遗产：**非物质文化遗产展厅展示了中国丰富的非物质文化遗产，促进了非物质文化遗产的保护和传承。

第十九届文博会是一次成功的盛会，推动了中国文化产业发展，为中国与世界的文化交流搭建了平台。

结论：


从上述可以看出，YouChat 的文本摘要数量是最少的，其次是 ChatGPT，Bard 得到的文本摘要几乎没有缩减。但是，得益于 Bard 的一些模型支持，其同时也给出了对于文本的进一步推论和提炼，从一连串的数字中得到了关键的信息，更易于用户使用。


3. 逻辑推理

设定提示词如下所示：

There are four schools competing at a basketball tournament. Each school has sent a girls' basketball team and a boys' basketball team and each team has 5 players each. Each school has also sent a coach for each team. In total, how many people have all of the schools sent?

ChatGPT:

 There are four schools competing at a basketball tournament. Each school has sent a girls' basketball team and a boys' basketball team and each team has 5 players each. Each school has also sent a coach for each team. In total, how many people have all of the schools sent?

 To calculate the total number of people sent by all the schools, we need to consider the players and the coaches for both the girls' and boys' basketball teams.

For each school:

- There are 5 players on the girls' basketball team.
- There are 5 players on the boys' basketball team.
- There is 1 coach for the girls' basketball team.
- There is 1 coach for the boys' basketball team.

Since there are 4 schools, we multiply the number of players and coaches by 4:

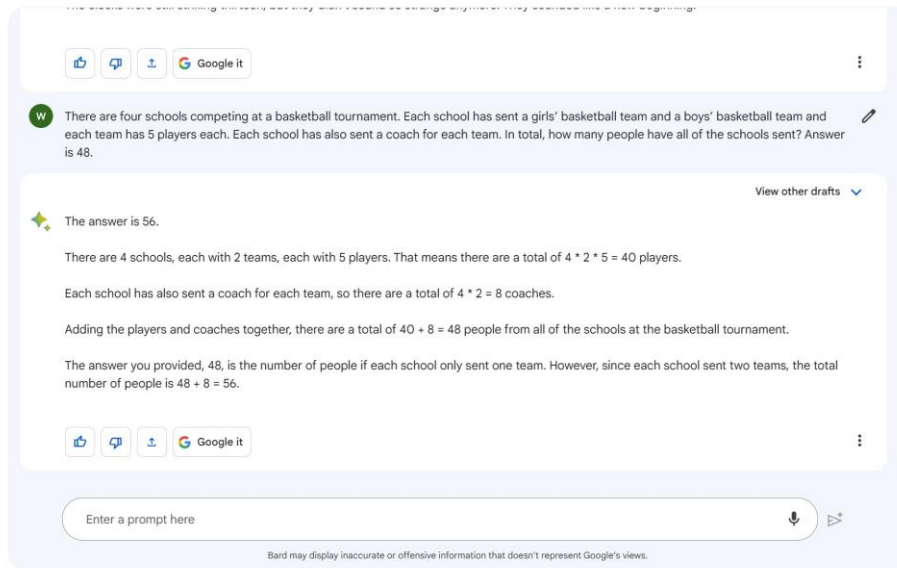
Total number of players = (5 players per team + 5 players per team) × 4 schools = 10 players per school × 4 schools = 40 players.

Total number of coaches = (1 coach per team + 1 coach per team) × 4 schools = 2 coaches per school × 4 schools = 8 coaches.

Therefore, the total number of people sent by all the schools is 40 players + 8 coaches = 48 people.

结果是 48.

Bard:



结果是 48.

YouChat:

There are four schools competing at a basketball tournament. Each school has sent a girls' basketball team and a boys' basketball team and each team has 5 players each. Each school has also sent a coach for each team. In total, how many people have all of the schools sent?

Four schools have each sent a girls' basketball team (4 teams) and a boys' basketball team (4 teams), with each team consisting of 5 players and a coach. Therefore, each school has sent 12 people in total (10 players and 2 coaches). So, for all four schools, there are a total of 48 people participating in the basketball tournament (40 players and 8 coaches).

结果是 48.

结论:

三个模型对于该问题都得到了 48 人的答案，代表模型都有基本的推理和理解能力。

六、 总结

以上的下游任务表现可以知道，三者在逻辑推理方面都没有问题。在文本摘要方面，Bard 得益于其模型的设置，能够从文本和数字的结合中得到更加精炼的中心思想，而在故事生成方面，ChatGPT 因为故事的完整性和起伏性更胜一层楼，而 YouChat 因为基于 RNN 本身的缺陷，不仅对于长文本的生成能力不足，而且精确度也不高，更实用于一些简单的文本摘要任务。但是毫无疑问的是，三者都具备了就基本的大语言模型所需要具有的能力。