第11章CHAPTER 11AI搜尋
第二部分：「眼肉」與DOI排序演算法AI-Search Part 2:“ Eye Meat ”and DOI Sort Algorithms

現在我們已經解決了 LLM 搜索，讓我們看看動態儀表板（“ 眼肉 ”）和 DOI（興趣程度）排序算法，這是 AI 的兩個關鍵應用，用於以與特定客戶興趣相關的方式對大量內容進行排序和顯示。

Now that we ’ ve tackled the LLM search, let ’ s look at dynamic dashboards (“ eye meat ”) and DOI (degree of interest) sort algorithms, two critical applications of AI for sorting and displaying large quantities of content in a way that relates to the interests of a particular customer.

什麼是動態儀表板？

What Are Dynamic Dashboards?

動態儀表板並不是一個新概念。愛德華．塔夫特 （Edward Tufte） 稱這些結構為“ 視覺糖果 ”，約翰．前田 （John Maeda） 稱這些創作為“ 眼睛肉 ”（非常適合我們不太可怕的懸疑主題）。無論您怎麼稱呼它們，這些視覺化儀表板都是我們大部分數位體驗展開的平台。

Dynamic dashboards are not a new concept. Edward Tufte called these constructs“ visual confections, ” and John Maeda called these creations“ eye meat ”(super-apropos to our not-too-scary mysteries theme). Regardless of what you call them, these visual dashboards are the platform on which most of our digital experience unfolds.

首先我要說：

Let me just start by saying:

便條

NOTE

弄清楚特定客戶接下來想看什麼是一個棘手的問題。

Figuring out what a particular customer wants to look at next is a tough problem.

解決這個問題有多難的一個很好的例子來自 Amazon.com（見圖 11.1）。請注意所有箭頭——這些是演算法出錯的項目。

An excellent example of just how hard it is to solve this problem comes from Amazon.com (see Figure 11.1). Note all of the arrows—those are the items that the algorithm got wrong.

這個主屏幕講述了我頻繁的購物習慣和可能的下一次購買的細緻入微的故事。就像我在第 9 章「LLM 設計模式」中介紹的建議和後續步驟一樣，其中 AI 用於推斷下一個問題，這個亞馬遜頁面也是在 AI 的幫助下建構的。每個單獨的部分或“評分標準”都有一個略有不同的獨立算法。這就是為什麼某些部分有重複的信息——例如運動鞋海報。雖然我是阿麗塔的粉絲，但亞馬遜認為我會讀多少部青少年機器人漫畫？（顯然很多。四。斯利。四個太多了。或。。。我認為.....阿麗塔，你完成了我！

This home screen tells a nuanced story of my frequent shopping habits and likely next purchases. Just like Suggestions and Next Steps I covered in Chapter 9, “LLM Design Patterns,” where AI is used to infer the next question, this Amazon page is also constructed with the help of AI. Each separate section, or “rubric,” has a slightly different, independent algorithm. This is why some of the sections have repetitive information—the sneaker poster, for example. And while I’m a fan of Alita, how many teen robot mangas does Amazon think I’m going to be reading? (A lot, apparently. Four. Srsly. Four is too many. Maybe … I think … Alita, you complete me!)

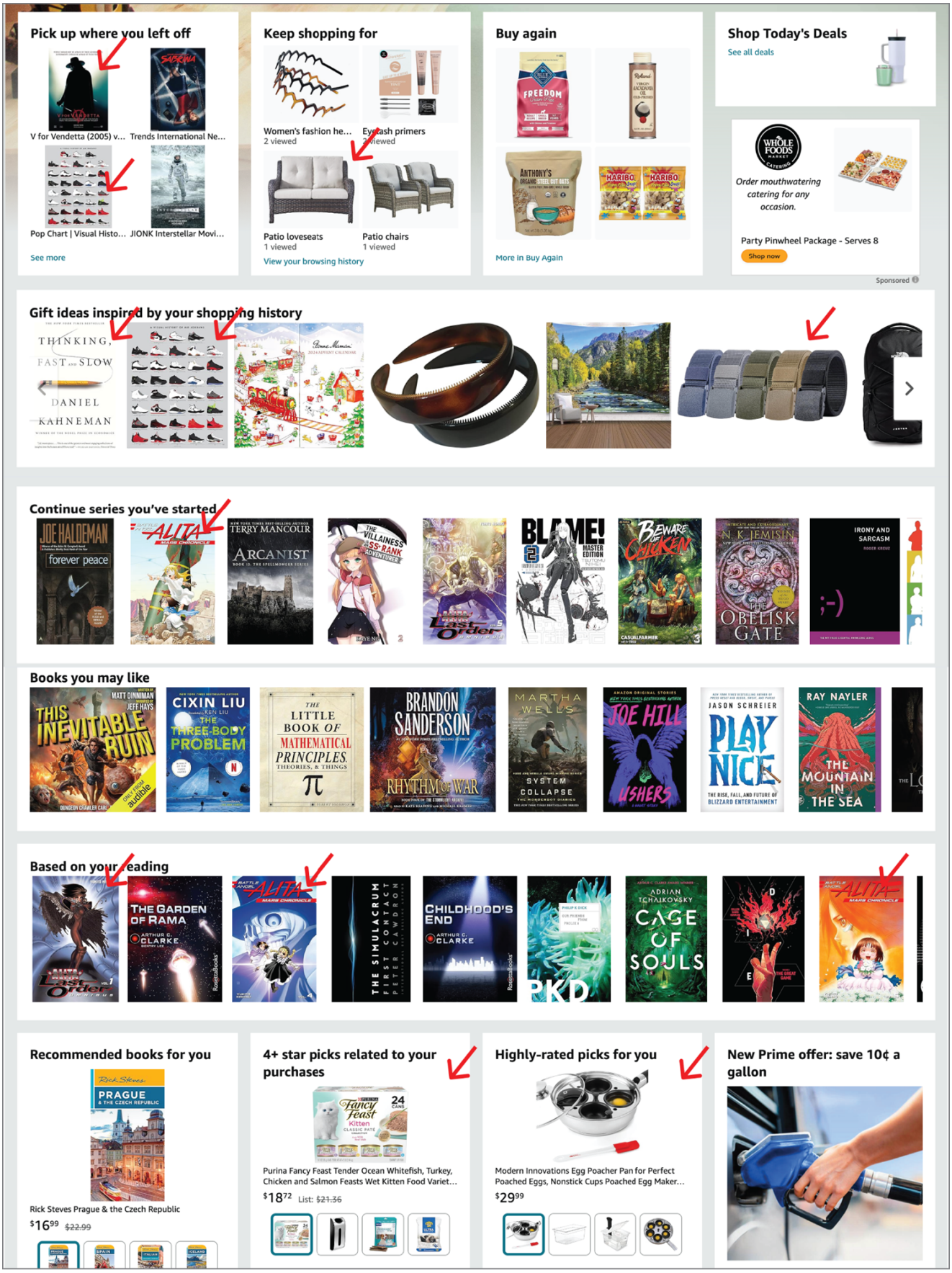


圖 11.1 弄清楚客戶接下來想要什麼是一個棘手的問題

Figure 11.1 Figuring out what the customer wants next is a tough problem

資源： 亞馬遜

Source: Amazon

亞馬遜顯然在這裡犯了其他一些錯誤：

Some other stuff Amazon clearly got wrong here:

- 我沒有養任何貓，從不買任何貓糧，也永遠不會。我是一個愛狗的人。時。I don’t own any cats, never buy any cat food, and never will. I’m a dog person. Period.
- 我不太喜歡荷包蛋。我每年都會吃一次。我購買偷蛋設備的可能性是.....好吧，我們只能說這不太可能。I’m not a big fan of poached eggs. I eat them once a year. The likelihood of me buying the egg poaching appliance is … well, let’s just say it’s highly unlikely.
- 雖然我經常出差參加各種會議，但我沒有去布拉格的計劃（也許亞馬遜知道一些我不知道的事情。嘿，布拉格用戶體驗窺視者，我可以參加 AI 研討會的用戶體驗！While I travel a great deal for various conferences, I have no plans to go to Prague (maybe Amazon knows something I don’t. Hey, Prague UX peeps, I’m available for UX for AI workshops!)
- 亞馬遜認為我需要多少套 5 條腰帶、花園家具套裝和 V for Vendetta 海報？How many sets of 5 belts, garden furniture sets, and V for Vendetta posters does Amazon think I need?

從圖 11.2 所示的@GirlFromBlupo貼文的按讚數來看，我的亞馬遜經歷並不是獨一無二的。

Judging from the number of likes on the post from @GirlFromBlupo shown in Figure 11.2, my Amazon experience is not unique.

圖 11.2 嘿，亞馬遜，我們大多數人不收集馬桶座圈

Figure 11.2 Hey, Amazon, most of us do not collect toilet seats

來源：X 上的 GirlFromBlupo

Source: GirlFromBlupo on X

視覺化儀表板的另一個範例來自 Google。圖 11.3 顯示了在行動裝置和桌面上搜尋 Jungle Book 的結果，兩者都是透過同一個 Google 帳戶完成的。

Another example of a visual dashboard comes from Google. Figure 11.3 shows the result of the search for Jungle Book on mobile and desktop, both done from the same Google account.

這個查詢是模棱兩可的：拉迪亞德．吉卜林的這個原創故事催生了多部電影改編和相關故事，因此用戶可以要求叢林之書宇宙中的任何東西。然而，谷歌移動非常刻意地將重點放在喬恩．費儒 （Jon Favreau） 的 2016
年電影《叢林之書》（一部好電影）上。奇怪的是，Google 桌面中完全相同的查詢集中在 Wolfgang Reitherman 的 1967 年迪士尼經典版本上！

This query is ambiguous: This original tale by Rudyard Kipling has spawned multiple movie adaptations and related tales, so the user could be asking for anything in the Jungle Book universe. However, Google Mobile quite deliberately focuses on the 2016 movie The Jungle Book by Jon Favreau (a fine film). What is bizarre is the fact that the exact same query in Google Desktop focuses on the 1967

Disney Classic version by Wolfgang Reitherman!

（另外值得指出的是，1967 年以 Le Livre de la Jungle 為名的電影選擇了一則法語廣告，這完全是奇怪的。這是右側產品圖塊中出現的唯一視訊連結。

(Also worth pointing out is the utterly bizarre choice of a French-language ad for the 1967 film under the name Le Livre de la Jungle. It ’ s the only video link that appears in the product tile on the right.)

整個頁面是使用 Google 專有算法構建的，包括佈局選擇、“ 另見 ” 部分、產品圖塊、趨勢部分等。這種「視覺大雜燴」的儀表板方法通常故意含糊不清，避免遵守嚴格的規則，這使其成為人工智慧的完美遊樂場。在《叢林之書》登陸頁面（見圖 11.4）上，我們的機器人霸主給了我們 “ 關於熊的電影 ”，這給了我們一種奇怪的機器意義。這一行包含精彩、高度相關的內容。

The entire page is constructed using Google ’ s proprietary algorithm, including the choice of layout, the “ See also ” section, product tile, trending section, and so forth. This “ visual smorgasbord ” dashboard approach is often deliberately vague and avoids obeying strict rules, which makes it the perfect playground for AI. On the Jungle Book landing page (see Figure 11.4), our robot overlords give us “ movies about bears, ” which makes a weird sort of machine sense. And that row features brilliant, highly relevant content.

不幸的是，這種「人工智慧模糊」有時會適得其反。

Unfortunately, this “ AI vagueness ” sometimes backfires.

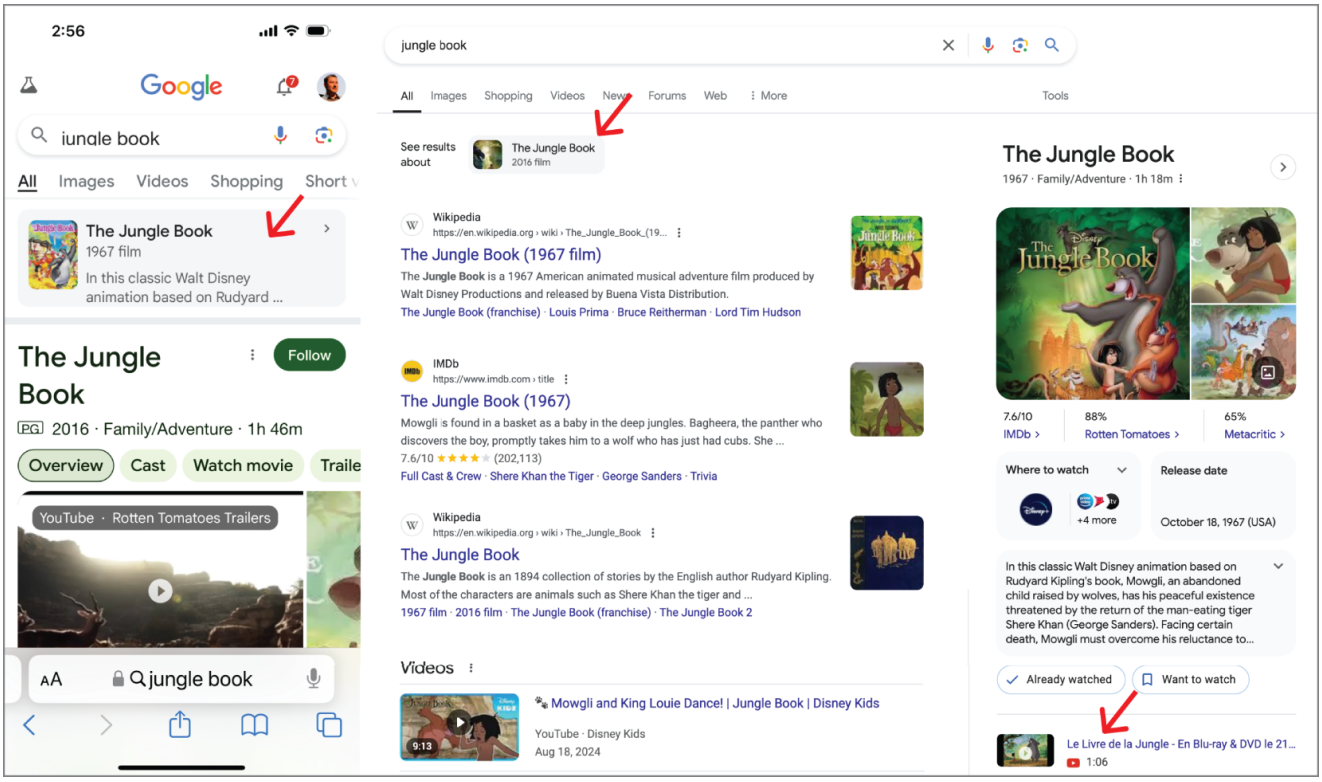
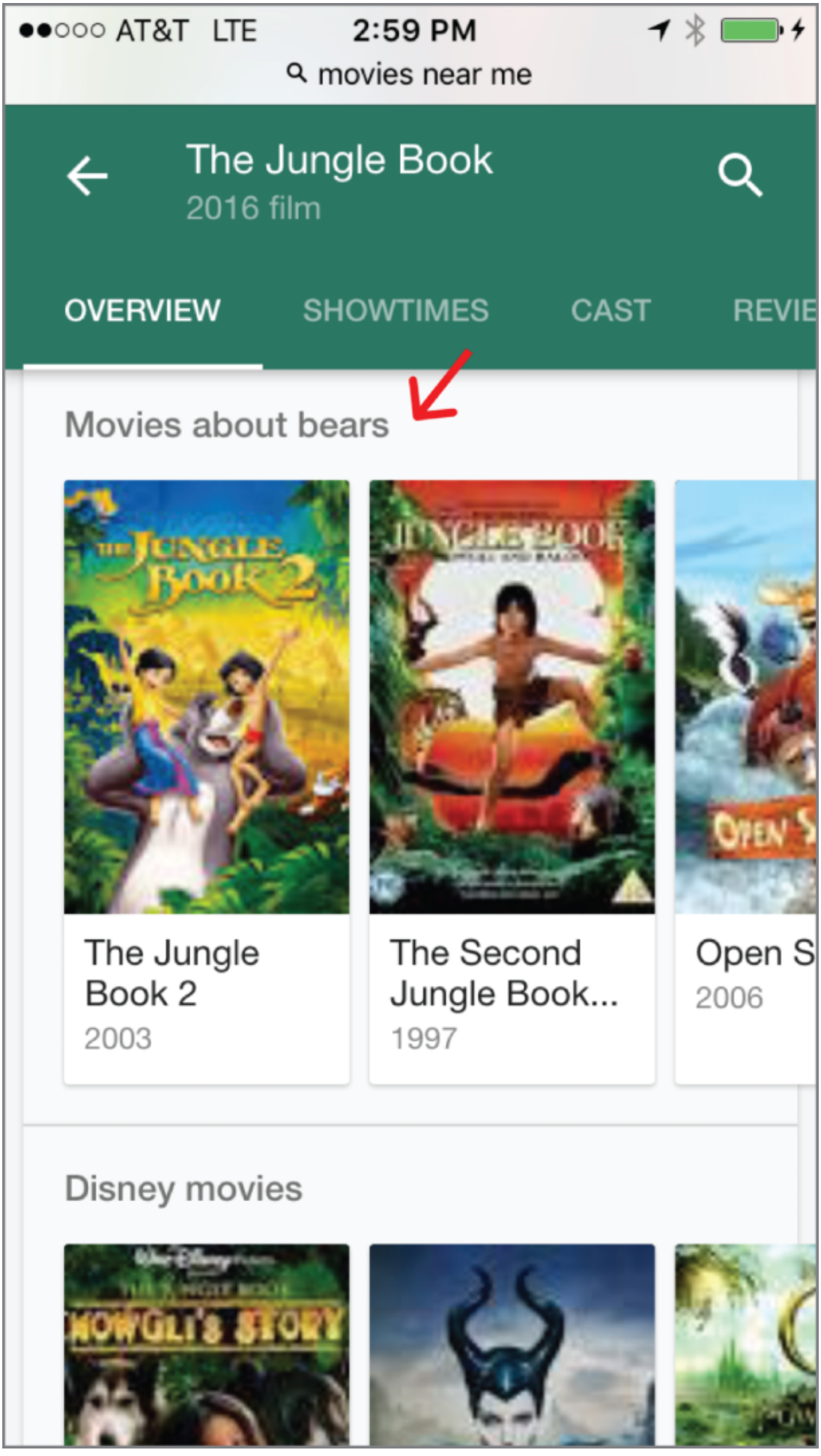


圖 11.3 行動裝置（左）和桌面（右）上的叢林圖書搜尋

Figure 11.3 Jungle Book search on mobile (left) and desktop (right)

資源： 谷歌

Source: Google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2:59 PM
movies near me
The Jungle Book
2016 film
OVERVIEW
SHOWTIMES
CAST
REVIE
Movies about bears
The Jungle Book 2
2003
The Second Jungle Book...
1997
Open S
2006
Disney movies

圖 11.4 關於熊的電影

Figure 11.4 Movies about bears

資源： 谷歌

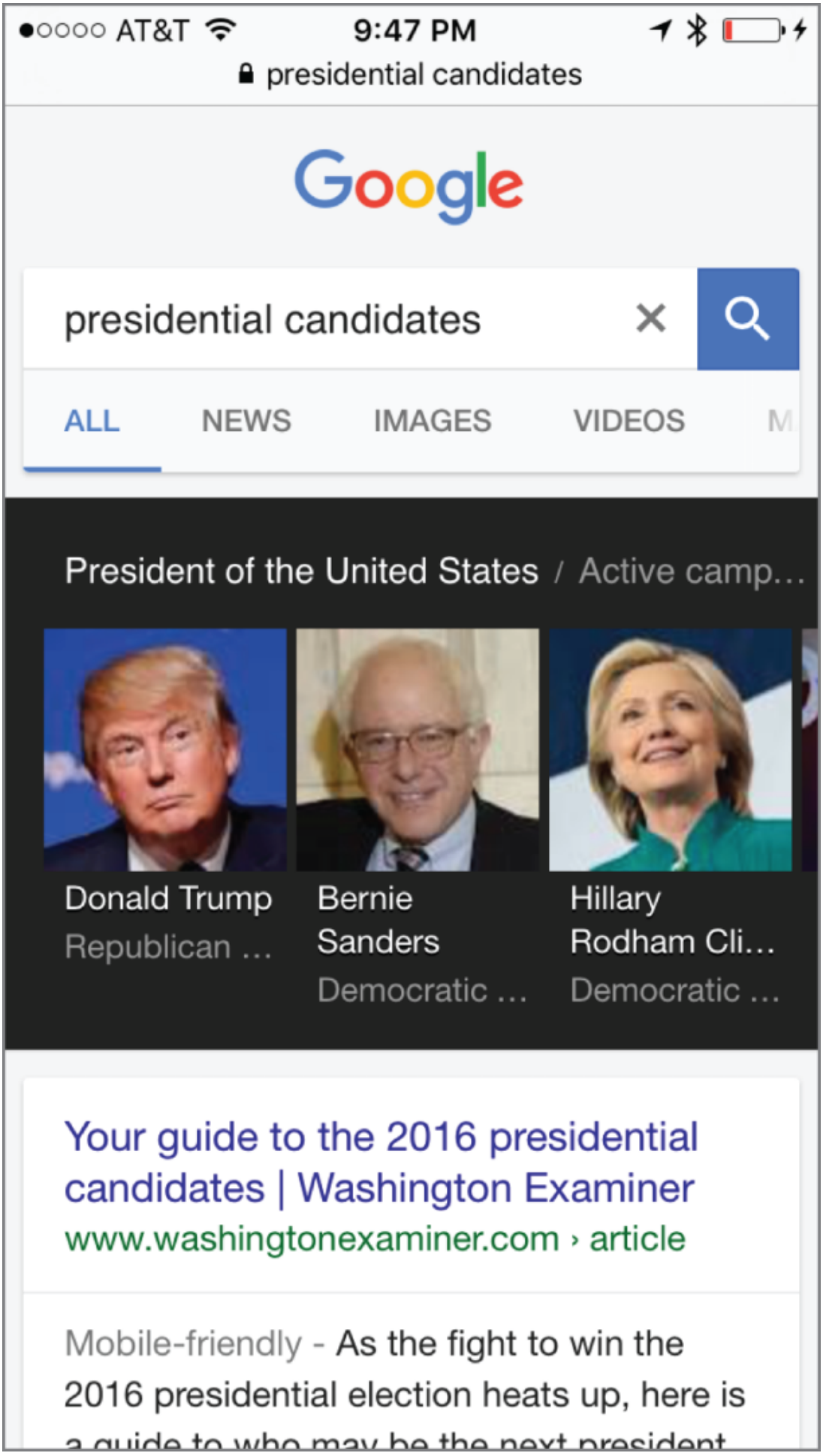
Source: Google

謹防人工智慧推薦中的偏見

Beware of Bias in AI Recommendations

圖 11.5 顯示了 2016 年 9 月執行的「總統候選人」查詢範例。

Figure 11.5 shows an example of the query “ presidential candidates ” performed in September 2016.


●○○○○ AT&T
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ALL
NEWS
IMAGES
VIDEOS
President of the United States / Active camp…
Donald Trump
Republican …
Bernie Sanders
Democratic …
Hillary Rodham Cli…
Democratic …
Your guide to the 2016 presidential candidates | Washington Examiner
www.washingtonexaminer.com › article
Mobile-friendly - As the fight to win the 2016 presidential election heats up, here is

圖 11.5 2016 年 9 月收集的查詢「總統候選人」的搜尋結果

Figure 11.5 Search results for query“ presidential candidates, ”collected September 2016

資源： 谷歌

Source: Google

如您所見，即使距離 11 月 5 日大選如此之近，谷歌也顯示了三個主要候選人，而不是兩個。此時，唐納德．川普和希拉蕊．柯林頓都牢牢獲得了本黨的提名，但谷歌頑固地拒絕將伯尼．桑德斯從陣容中除名。

As you can see, even this close to the general election on November 5, Google displays not two but three major candidates. By this time, both Donald Trump and Hillary Clinton had firmly secured their party ’s nominations, yet Google stubbornly refused to remove Bernie Sanders from the lineup.

但至少希拉蕊．柯林頓實際上出現在了陣容中。

But at least Hillary Clinton actually appeared in the lineup.

對於 2024 年大選，我們發現情況要糟糕得多。圖 11.6 顯示了 Google 在 2024 年 9 月 8 日收集的結果（與圖 11.5 中的圖像大致相同）。

For the 2024 election, we find the situation is much worse. Figure 11.6 shows Google ’s results collected on September 8, 2024 (around the same time as the image in Figure 11.5).

第一頁由布希主導，他「不願意支持總統候選人」。據《華盛頓郵報》報道，儘管哈里斯在幾週前，即 2024 年 8 月 2
日獲得了民主黨提名，但第二頁同樣沒有卡馬拉．哈里斯的照片（參見 www.washingtonpost.com/politics/2024/08/02/harris-becomes-democratic-nominee）。

The first page is dominated by Bush, who is“ unwilling to endorse a presidential candidate. ”The second page likewise features no images of Kamala Harris—despite Harris having secured the Democratic Party nomination weeks before, on August 2, 2024, according to the Washington Post (see www.washingtonpost.com/politics/2024/08/02/harris-becomes-democratic-nominee).

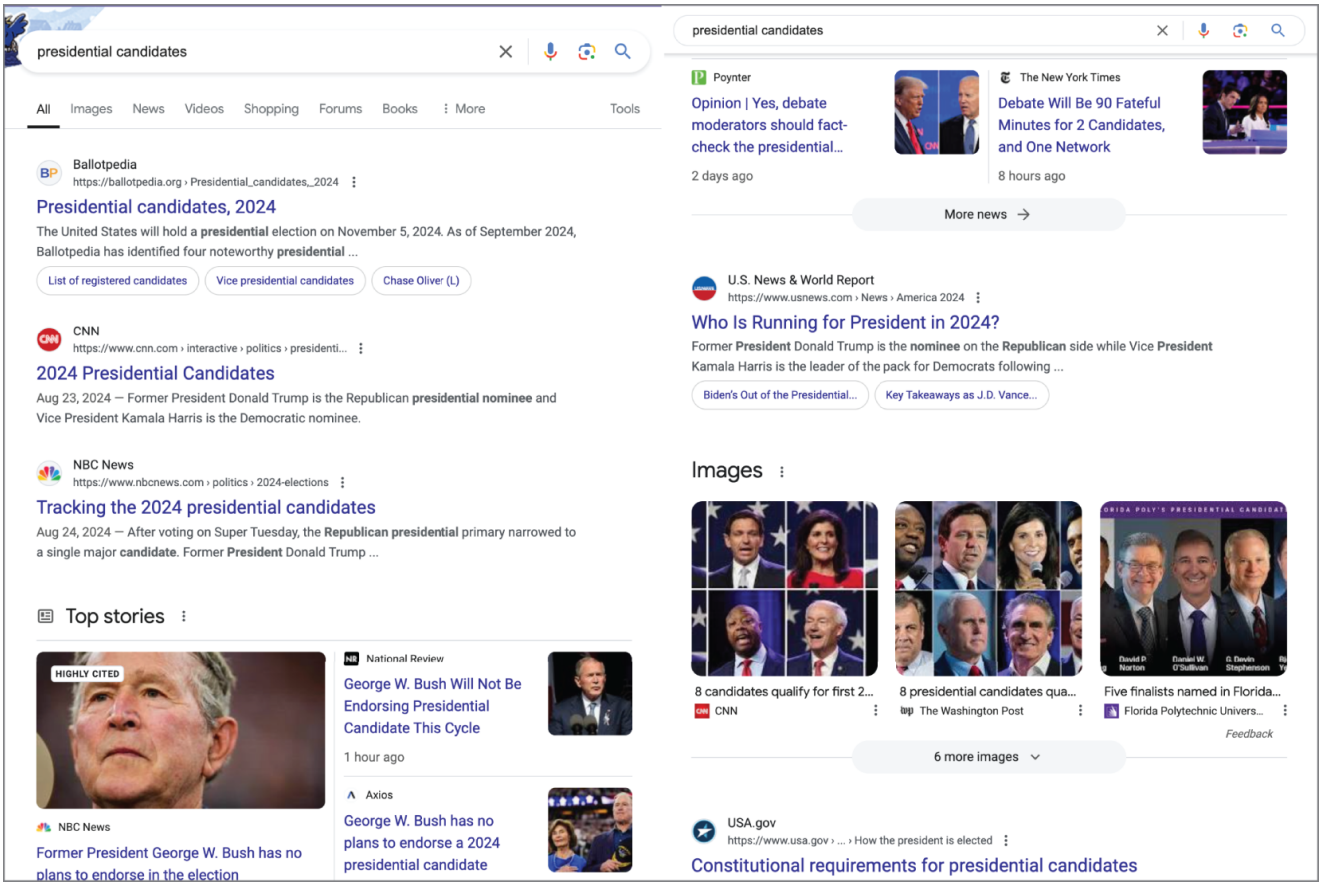

圖 11.6 2024 年 9 月 8 日收集的查詢「總統候選人」的搜尋結果

Figure 11.6 Search results for query “ presidential candidates, ” collected on September 8, 2024

資源： 谷歌

Source: Google

但樂趣還不止於此。導航到“ 圖像 ”選項卡（見圖 11.7），我們沒有發現卡馬拉・哈里斯與她的對手唐納德・特朗普對峙的一個例子。

But the fun doesn ’ t stop there. Navigating to the Images tab (see Figure 11.7), we find not a single example of Kamala Harris facing off against her opponent, Donald Trump.

洎。。。第 6 頁（圖 11.8）！就在美國圖書館協會主席、穆罕默德・巴格爾・加利巴夫和賽義德・賈利利競選伊朗總統的激烈競爭旁邊！谷歌發出信號，卡馬拉・哈里斯的總統競選幾乎無關緊要。

Until ⋯ page 6 (Figure 11.8)! Right next to the heated race for the president of the American Library Association, and Mohammad Bagher Ghalibaf and Saeed Jalili—running for presidential election in Iran! Google is signaling that Kamala Harris ’ presidential bid is all but irrelevant.

這是一個很好的例子，說明每當您使用 AI 構建自己的可視化儀表板或對搜索結果進行排序時，都需要敏銳地意識到 AI 偏見。（您將在本書的第 4 部分中了解有關 AI 偏見和道德的更多資訊。

This is an excellent example of the urgent and critical need to be keenly aware of AI bias whenever you are using AI to construct your own visual dashboards or to sort your search results. (You ’ ll learn more about AI bias and ethics in Part 4 of this book.)

DOI：興趣度/排序演算法

DOI: Degree of Interest/Sort Algorithms

內容是否出現在搜尋結果的第一頁或降級到搜尋結果的第 6 頁（或第 1,006 頁）取決於興趣程度 （DOI） 演算法，該演算法控制向使用者顯示的項目的排序順序。雖然對該主題的深入討論遠遠超出了本章的範圍，但我至少應該提到一些對您的設計有用的要點。

Whether content appears on the first page or is relegated to page 6 (or page 1,006) of your search results is determined by the degree of interest (DOI) algorithms, which control the sort order of items displayed to the user. While the in-depth discussion of the subject is well beyond the scope of this chapter, I should mention at least a few salient points that will be useful in your designs.

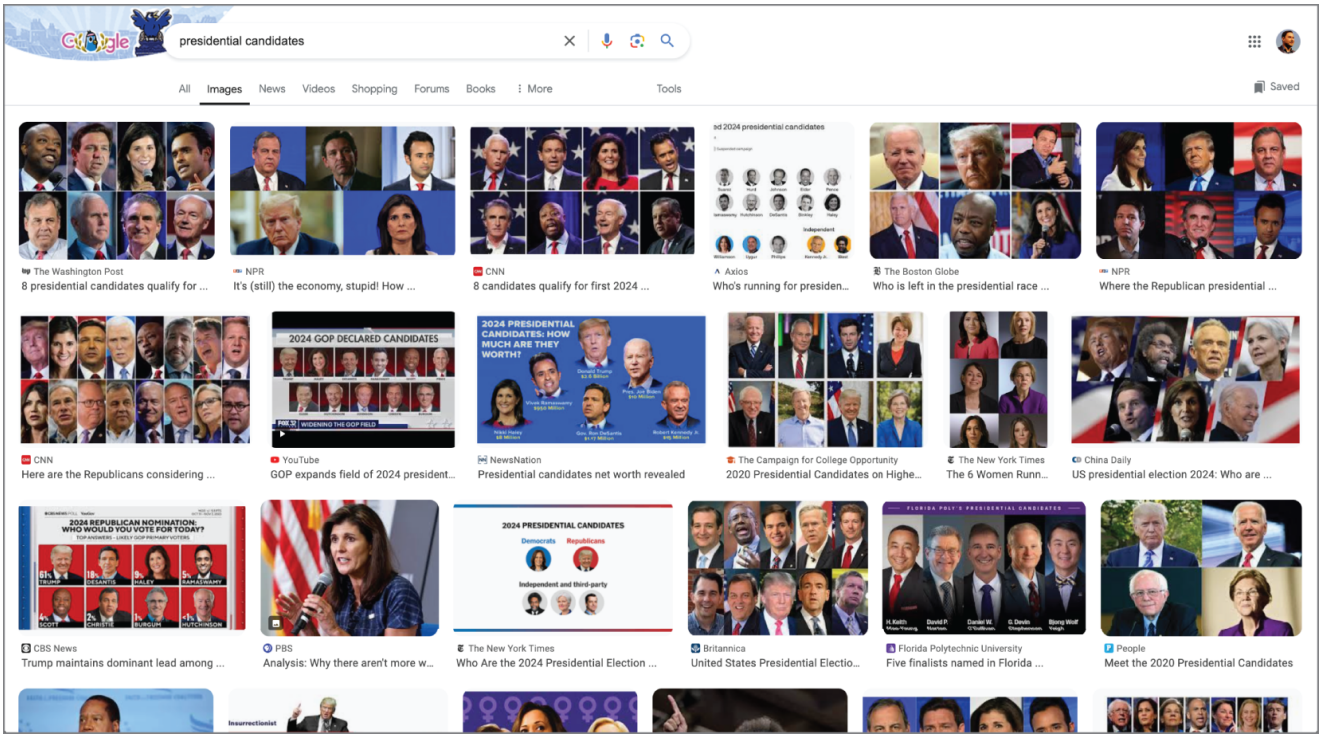

圖 11.7 總統候選人圖像搜尋結果，2024 年 9 月 8 日收集

Figure 11.7 Presidential candidates image search results, collected September 8, 2024

資源： 谷歌

Source: Google

圖 11.8 兩位主要總統候選人直到第 6 頁才一起出現

Figure 11.8 The two primary presidential candidates do not show up together until page 6

資源： 谷歌

Source: Google

舉一個相對簡單的例子，假設您負責嘗試決定是否要使用一個新的主題標籤，該標籤在您的網站上獲得了不錯的流量。圖 11.9 顯示了主題標籤隨時間變化的網路視圖圖表。

To give a relatively straightforward example, let ’ s say you are in charge of trying to decide whether to feature a new hashtag that is getting some decent traffic on your website. Figure 11.9 shows a graph of web views of your hashtag over time.

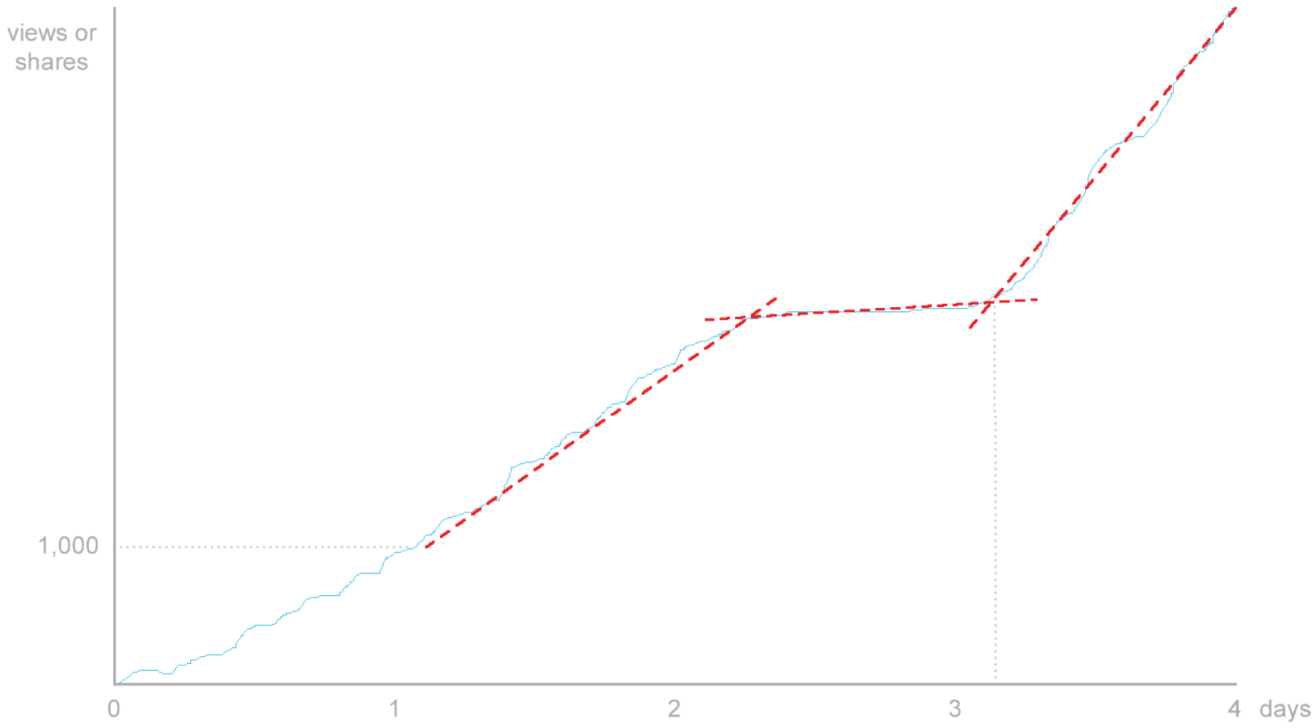

圖 11.9 特定主題標籤隨時間變化的 Web 瀏覽量

Figure 11.9 Web views over time for a specific hashtag

因為當你從 0 開始時，任何東西都可能顯示為“ 高增長 ”，所以首先我們必須定義一定的最低瀏覽量，以使主題標籤值得考慮——比如 1,000。這個數字是賦予主題標籤「合法性」的最低門檻。此時，我們可以應用演算法來梳理曲線的斜率，這將使我們了解主題標籤的受歡迎程度是增長、縮小還是保持不變。

Because anything might appear as “ high growth ” when you start from 0, first we have to define a certain minimum number of views to make a hashtag worthy of consideration—let ’ s say 1,000. That number is the minimum threshold that will give “ legitimacy ” to the hashtag. At this point, we can apply the algorithm to tease out the slope of the curve, which will give us an idea of whether a hashtag ’ s popularity is growing, shrinking, or remaining the same.

斜率越高，主題標籤就越“ 熱門 ”和“ 時尚 ”。如果斜率超過特定數字，例如高於 1（45 °），演算法可能會將其視為命中，然後將主題標籤稱為「趨勢」。

The higher the slope, the “ hotter ” and more “ trendy ” the hashtag is. If the slope is beyond a specific number, for example, higher than 1 (45 °), the algorithm might consider it a hit and the hashtag is then said to be “ trending. ”

因此，使用這張圖，這個主題標籤只有在第三天之後才成為“ 趨勢 ”。

So, using this graph, this hashtag only becomes “ trending ” after the third day.

然而，與更突出、也許更重要和更持久的主題的網路流量圖表相比，整個上一個圖表可能只是一個小插曲（見圖 11.10）。

However, this entire previous graph can be just a blip compared to a graph of web traffic of a more prominent, perhaps more important and enduring topic (see Figure 11.10).

一個好的排序演算法應該能夠捕捉新的發展，同時關注讀者繼續感興趣的持續高效能主題。查看圖表，很容易理解為什麼這可能是一項艱鉅的任務。請注意，已建立主題的暗線使新主題標籤的較小線相形見絀。這就是為什麼排序算法經常做出特殊考慮，強調最新的“ 趨勢 ”項目。

A good sorting algorithm should be able to capture new developments while keeping an eye out for consistently high-performing topics that the readers continue to be interested in. Looking at the graph, it is easy to see why this might be a difficult task. Note that the dark line of the established topic dwarves the smaller line of the new hashtag. That is why the sorting algorithm often makes special allowances, emphasizing the most recent “ trending ” items.

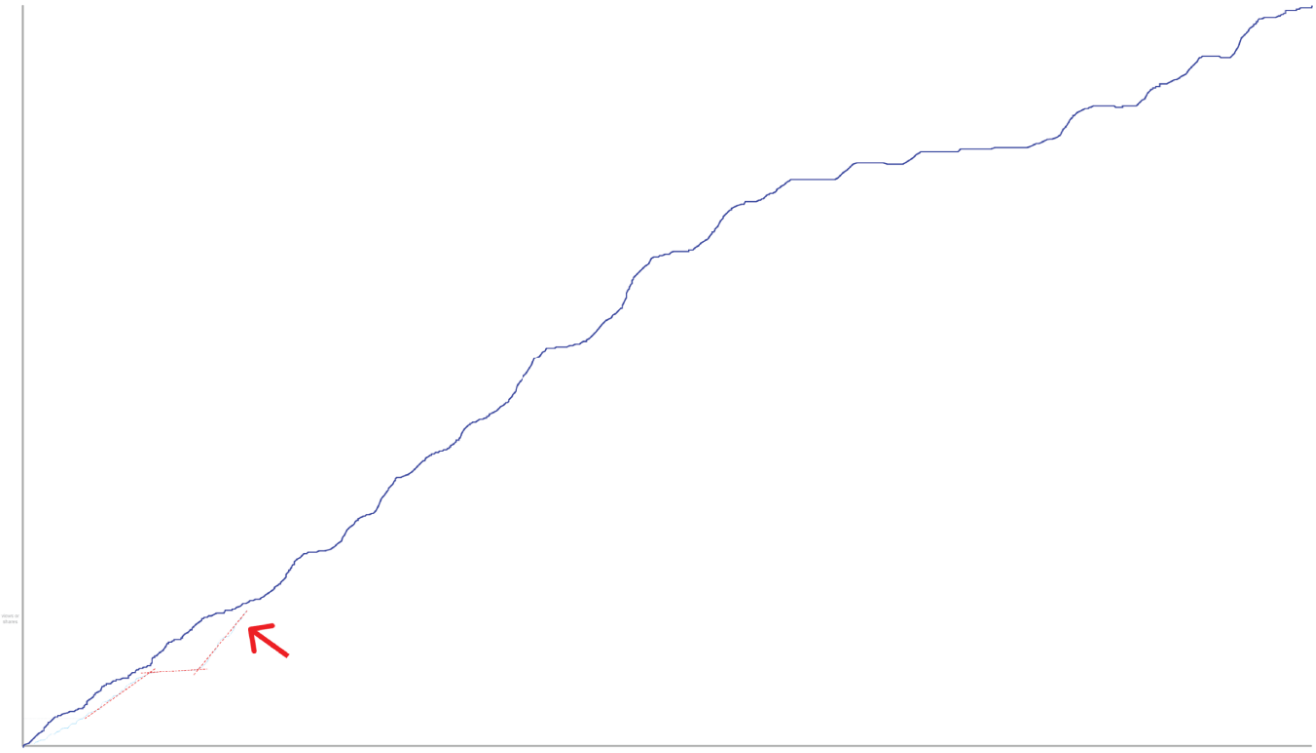

圖 11.10 新趨勢主題標籤（左下角的小圖表，垂直線之前）與流量更多的更持久的主題並置（整個圖表上的暗線）

Figure 11.10 Newly trending hashtag (small graph in bottom left, before the vertical line) juxtaposed against a more enduring topic with considerably more traffic (dark line across the entire graph)

便條

NOTE

典型的排序通常有兩個或多個不同的演算法協同工作（競爭）以確定整體排序順序。然後，這些項目會一起顯示為單一清單。

A typical sort normally has two or more different algorithms working together (competing) to determine the overall sorting order. The items then appear together as a single list.

這就是為什麼有關排序順序、趨勢和 DOI 曲線的討論通常涉及秘密專有演算法，因為每家公司都努力添加自己的「秘密趨勢醬汁」。

That’s why discussions concerning sort order, trending, and DOI curves often involve secret proprietary algorithms, as each company strives to add its own“secret trending sauce”to the mix.

便條

NOTE

在幫助您的團隊設計排序演算法時，請保持好奇心！不要害怕提出尖銳的問題，例如如何進行特定選擇、有多少演算法以及每種類型的演算法代表哪些頂級項目。花時間了解您的公司如何賺錢以及排序算法如何幫助您的組織取得成功。

When helping your team design an algorithm for sorting, get curious! Don’t be afraid to ask tough questions, such as how the particular selection is made, how many algorithms there are, and what top items are represented by each type of the algorithm. Take the time to understand how your company makes money and how the sort algorithm helps your organization achieve success.

回想一下 Facebook 的排序演算法在傳播煽動 2020 年 1 月 6 日美國國會大廈襲擊暴力的謊言方面所發揮的關鍵作用 （1-3）。

Recall the critical role that Facebook’s sort algorithm played in spreading lies that fomented the violence of the January 6, 2020, U.S. Capitol attack (1 – 3).

霍景楠和香農·邦德（Shannon Bond）最近發表的一篇 NPR 文章《新研究顯示 Facebook 的演算法如何塑造保守派和自由派泡沫》，於 2023 年 7 月 27 日發表，強調了問題的複雜性（4）。文章總結了迄今為止的各種研究，指出“有強有力的證據表明，在政治方面，Facebook 算法偏向極端”。研究發現，在 Facebook 上，自由派和保守派比在線其他地方更生活在自己的政治新聞泡沫中。平均而言，用戶看到的帖子中約有一半來自志同道合的來源。五分之一的用戶在該平台上經歷過迴聲室，他們看到的帖子中至少有四分之三來自意識形態一致的來源。

A recent NPR article,“New Study Shows Just How Facebook’s Algorithm Shapes Conservative and Liberal Bubbles,”by Huo Jingnan and Shannon Bond, published July 27, 2023, underscores the complexity of the problem (4). Summarizing various studies to date, the article states that there is “strong evidence that when it comes to politics, the Facebook algorithm is biased towards the extremes.”The studies found that on Facebook, liberals and conservatives live in their own political news bubbles more so than elsewhere online. On average, about half the posts users see come from like-minded sources. One out of five users experience an echo chamber on the platform, where at least three-quarters of the posts they see come from ideologically aligned sources.

研究還表明，改變平台的算法會極大地改變人們在網站上看到的內容和行為方式。一項為期三個月的研究，針對按時間倒序（沒有任何算法排名）進行簡單排序的用戶，顯著影響了他們使用該平台的方式：他們發布的有關政治的信息較少，喜歡政治內容的次數較少，也不太可能分享他們投票給誰或提及政治家和公職候選人。

The studies also show that changing the platform’s algorithm substantially changes what people see and how they behave on the site. A three-month study of users who were moved to a simple sort in reverse chronological order (without any algorithmic ranking) significantly affected how they used the platform: They posted less about politics, liked political content less, and were less likely to share who they voted for or to mention politicians and candidates for office.

然而，這是關鍵：

However—and this is the key:

便條

NOTE

擺脫算法驅動的提要也減少了人們在平台上花費的時間，將他們發送到 Instagram。

Getting rid of the algorithmically driven feed also curtailed the amount of time people spent on the platform, sending them to Instagram.

（作者旁白：人們不禁強烈地想起吸毒成癮的人，他們沒有從通常的經銷商那裡找到他們選擇的毒品，就繼續走在街上.....

(Author ’ s aside: One can ’ t help but be strongly reminded of people addicted to drugs, who, not finding their drug of choice from their usual dealer, move on down the street …)

更少的時間和更少的參與度在平台上意味著更少的錢。我們談論的是很多錢。

And less time and less engagement on the platform means less money. And we are talking about a lot of money.

文章警告說：“ 改變 Facebook 的算法以降低參與度將產生重大的業務影響。這些系統提供的內容，他們預測將保持用戶點擊、點贊、評論和分享，從而為廣告創造受眾，從而產生 Meta 1,166 億美元年收入的幾乎全部。

The article warns: “ Changing Facebook ’ s algorithm to reduce engagement would have significant business implications. The systems serve up content they predict will keep users clicking, liking, commenting, and sharing—creating an audience for the advertising that generates nearly all of Meta ’ s $116.6 billion in annual revenue. ”

也許最好的總結是杜克大學極化實驗室主任克里斯．貝爾（Chris Bail）的引述，文章中引用他的話說：

Perhaps the best summary is offered by Chris Bail, director of Duke University ’ s Polarization Lab, who is quoted in the article saying:

We need many, many more studies before we can come up with these types of sweeping statements about Facebook ’ s impact on democracy, polarization, the spread of misinformation, and all of the other very important topics that these studies are beginning to shed light on … We all want this to be a referendum on, is Facebook good or bad … But it ’ s not.

有一點是明確的：DOI 排序演算法和動態儀表板是我們大部分數位體驗展開的平台。讓使用者體驗參與理解驅動這些動態結構創建的人工智慧演算法及其對客戶行為的結果的重要性怎麼強調都不為過。

One thing is clear: The DOI sort algorithms and dynamic dashboards are the platform on which much of our digital experience unfolds. The importance of getting UX involved in understanding the AI algorithms driving the creation of these dynamic constructs and their results on customer behaviors cannot be overstated.

現在是使用者體驗設計師參與人工智慧驅動產品的時候了。這意味著學習基本的分析方法和用戶結果，以便我們能夠成為技術討論和產品策略的寶貴貢獻者。這正是我們將在本書第二部分的其餘章節中要做的事情。但首先，讓我們做一個快速的設計練習。

It is time for UX designers to get involved in AI-driven products. That means learning about basic analytics methods and user outcomes so that we can be valuable contributors to the technical discussions and product strategy. This is exactly what we will be doing in the remaining chapters in Part 2 of this book. But first, let ’ s do a quick design exercise.

設計練習：建立您自己的動態儀表板和排序 UI

Design Exercise: Create Your Own Dynamic Dashboards and Sort UI

繼續設計我們應用程序的內容，考慮內容將如何顯示給用戶，並為您的結果勾勒出一些選項。想：

Continuing the design of our application ’ s content, think how the content will be displayed to the user and sketch a few options for your results. Consider:

- 您需要一個“ 視覺大雜燴 ”儀表板還是一個排序的平面列表？Will you need a “ visual smorgasbord ” dashboard or a sorted flat list?
- 對於視覺化儀表板，將顯示哪些各個部分或評分標準？For a visual dashboard, what are the various sections or rubrics that will be displayed?
- 在每個評分標準中顯示內容的各種有效方法（圖塊、列表、主圖、可滾動輪播等）有哪些？What are the various effective ways to display the content in each rubric (tile, list, hero image, scrollable carousel, etc.)?
- 如果人工智慧在選擇和排序評分標準時做出選擇，它會使用什麼標準來確定它是否做出了正確的選擇？If AI were to make the choice in selecting and ordering the rubrics, what

criteria would it use to determine if it ’ s making the right choice?

- 您將如何獲取數據來訓練您的系統？How will you be getting the data to train your system?
- 對於列表演示，DOI 排序順序的各種算法將有助於用戶參與並為您的公司創造資金？（考慮受歡迎程度、新近度、趨勢、分享數量、與用戶興趣和品味的一致性等因素。For a list presentation, what will be the various algorithms for DOI sort order that will contribute to user engagement and generate money for your company? (Consider things like popularity, recency, trending, number of shares, alignment with user ’ s interests and tastes.)
- 特定排序的危險和倫理影響是什麼？事情怎麼會出錯？What are the dangers and ethical implications of a particular sort order? How might things go wrong?

如果您需要靈感，請參閱之前 Life Copilot 應用程式的範例設計、第 9 章中的視覺化儀表板，以及第 10 章「搜尋 UX 革命：搜尋 UI 中的 LLM AI」中搜尋結果中的 DOI 排序順序。在完成自己的設計練習之前，不要繼續下一章。

If you need inspiration, refer to the previous example designs of the Life Copilot app, a visual dashboard in Chapter 9, and DOI sort order in search results in Chapter 10, “ Search UX Revolution: LLM AI in Search UIs. ” Do not proceed to the next chapter until you complete your own design exercise.

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