IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
SHERMAN DIVISION

CONVERGENT ASSETS LLC, Plaintiff, v. **WALMART INC.,** Defendant.	C.A. No. 4:24-cv-740 **JURY TRIAL DEMANDED** **PATENT CASE**

ORIGINAL COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff Convergent Assets LLC, files this Original Complaint for Patent Infringement against Walmart Inc. and would respectfully show the Court as follows:

I. THE PARTIES

1. Plaintiff Convergent Assets LLC ("Convergent Assets" or "Plaintiff") is a Delaware limited liability company having an address at 1903 Toro Canyon Road, Austin, TX 78746.

2. On information and belief, Defendant Walmart Inc. ("Defendant" or "Walmart") is a Delaware corporation and has a regular and established place of business in at 6801 South Broadway Avenue, Tyler, TX 75703. Defendant has a registered agent at C T Corporation System, 1999 Bryan St., Ste 900, Dallas TX 75201.

II. JURISDICTION AND VENUE

3. This action arises under the patent laws of the United States, Title 35 of the United States Code. This Court has subject matter jurisdiction of such action under 28 U.S.C. §§ 1331 and 1338(a).

4. On information and belief, Defendant is subject to this Court's specific and general personal jurisdiction, pursuant to due process and the Texas Long-Arm Statute, due at least to its business in this forum, including at least a portion of the infringements alleged herein at 6801 South Broadway Avenue, Tyler, TX 75703, 450 S SE Loop 323, Tyler, TX 75702, 5050 Troup Hwy, Tyler, TX 75707, and many more.

5. Without limitation, on information and belief, Defendant has derived revenues from its infringing acts occurring within Texas. Further, on information and belief, Defendant is subject to the Court's general jurisdiction, including from regularly doing or soliciting business, engaging in other persistent courses of conduct, and deriving substantial revenue from goods and services provided to persons or entities in Texas. Further, on information and belief, Defendant is subject to the Court's personal jurisdiction at least due to its sale of products and/or services within Texas. Defendant has committed such purposeful acts and/or transactions in Texas such that it reasonably should know and expect that it could be haled into this Court as a consequence of such activity.

6. Venue is proper in this district under 28 U.S.C. § 1400(b). On information and belief, Defendant has a regular and established place of business in Texas at 6801 South Broadway Avenue, Tyler, TX 75703, 450 S SE Loop 323, Tyler, TX 75702, 5050 Troup Hwy, Tyler, TX 75707, and many more. On information and belief, from and within this District, Defendant has committed acts of infringement, including at least a portion of the infringements at issue in this case.

7. For these reasons, personal jurisdiction exists and venue is proper in this Court under 28 U.S.C. § 1400(b).

III. COUNT I
(PATENT INFRINGEMENT OF UNITED STATES PATENT NO. 11,049,138)

8. Plaintiff incorporates the above paragraphs herein by reference.

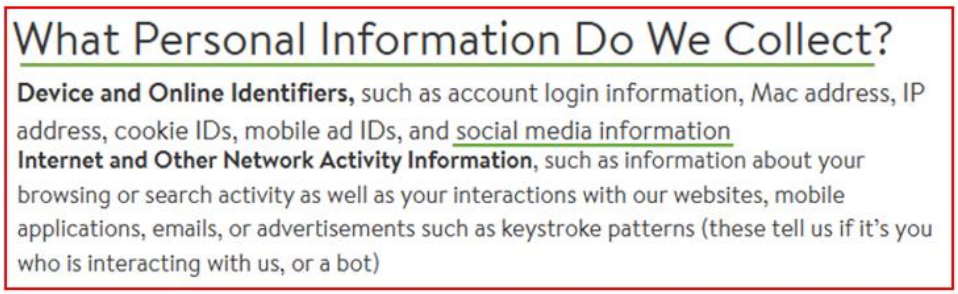
9. On June 29, 2021, United States Patent No. 11,049,138 ("the '138 Patent") was duly and legally issued by the United States Patent and Trademark Office. A true and correct copy of the '138 Patent is attached hereto as Exhibit A and incorporated herein by reference.

10. Convergent Assets is the assignee of all right, title, and interest in the '138 patent, including all rights to enforce and prosecute actions for infringement and to collect damages for all relevant times against infringers of the '138 Patent. Accordingly, Convergent Assets possesses the exclusive right and standing to prosecute the present action for infringement of the '138 Patent by Defendant.

11. The '138 Patent relates to the field of systems and methods for providing content that more closely matches a targeted user's current specific interest associated with social networking activity. (Ex. A at 1:38-49; 3:23-36, 48-55; 4:16-18; 7:6-9, 12-16). The inventors recognized that the current methods of determining content for a particular user based on keywords listed on a webpage being viewed by the user failed to align the determined content with the current preferences or interests of the user. (*E.g.*, *id.* at 1:38-49; 3:23-36, 48-55). The inventors therefore invented a sophisticated and improved method of using a computer that determines content for a targeted user by using social networking activity, recency of the content, ranking based on such information, and browsing information to determine what content to retrieve and provide to the user. (*E.g.*, *id.* at 1:38-49; 4:51-57; 5:4-11; 24:17-37).

12. **Direct Infringement.** Upon information and belief, Defendant has been directly infringing and continues to infringe claim 28 of the '138 Patent in Texas, and elsewhere in the United States. As shown below, Defendant's use and testing of https://www.walmart.com/ ("Accused Instrumentality") performs the claimed method and infringes claim 28. Walmart retailer obtains first data indicating words in content associated with social networking activity,

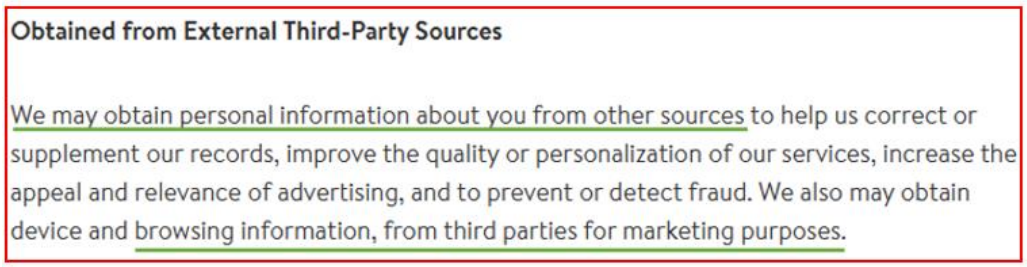
including user posts on social networking sites. For example, Walmart obtains social media information, such as users' social media posts, images, videos, messages, tweets, and browsing information.



What Personal Information Do We Collect?

Device and Online Identifiers, such as account login information, Mac address, IP address, cookie IDs, mobile ad IDs, and social media information

Internet and Other Network Activity Information, such as information about your browsing or search activity as well as your interactions with our websites, mobile applications, emails, or advertisements such as keystroke patterns (these tell us if it's you who is interacting with us, or a bot)

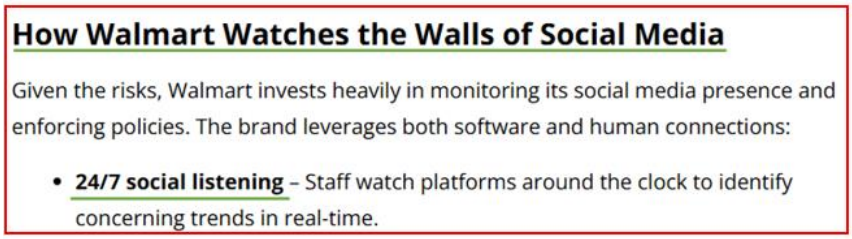


Obtained from External Third-Party Sources

We may obtain personal information about you from other sources to help us correct or supplement our records, improve the quality or personalization of our services, increase the appeal and relevance of advertising, and to prevent or detect fraud. We also may obtain device and browsing information, from third parties for marketing purposes.

(*E.g.*, https://corporate.walmart.com/privacy-security/walmart-privacy-notice).

With over 23 million rabid followers across its various social media profiles, Walmart dominates the digital landscape like a retail giant awakening from slumber. The brand leverages platforms like Facebook, Instagram, Twitter and TikTok to tease out deals, introduce new products, and communicate with its legion of loyal customers.



How Walmart Watches the Walls of Social Media

Given the risks, Walmart invests heavily in monitoring its social media presence and enforcing policies. The brand leverages both software and human connections:

- **24/7 social listening** – Staff watch platforms around the clock to identify concerning trends in real-time.

(*E.g.*, https://www.33rdsquare.com/walmart-social-media-policy/).

With more than 245 million customers visiting 10,900 stores and with 10 active websites across the globe, Walmart is definitely a name to reckon with in the retail sector.Whether it is in-store purchases or social mentions or any other online activity, Walmart has always been one of the best retailers in the world. The Global Customer Insights analysis estimates that Walmart sees close to 300,000 social mentions every week. With 2 million associates and approximately half a million associates hired every year, Walmart's employee numbers are more than some of the retailer's customer numbers. It takes in approximately $36 million dollars from across 4300 US stores everyday.This article details into Walmart Big Data Analytical culture to understand how big data analytics is leveraged to improve Customer Emotional Intelligence Quotient and Employee Intelligence Quotient.

(*E.g.*, https://www.projectpro.io/article/how-big-data-analysis-helped-increase-walmarts-sales-turnover/109).

In addition to structured data, Walmart also deals with unstructured data, such as customer reviews, social media posts, and images. To handle this unstructured data, Walmart employs advanced data processing techniques, including natural language processing (NLP) and image recognition. These tools allow Walmart to extract insights and sentiments from text data and analyze visual content, aiding in understanding customer preferences and trends.

(*E.g.*, https://robots.net/fintech/how-walmart-uses-big-data/).

Walmart analyzes user-generated content such as tweets and social posts to personalize product offerings.

(*E.g.*, https://www.projectpro.io/article/how-big-data-analysis-helped-increase-walmarts-sales-turnover/109).

13. Defendant (via the Accused Instrumentality) performs the step of generating second data indicating an association between first words of the indicated words and indicating a degree of the association, the degree of the association corresponds to a ranking based on a recency of the

content, wherein a first ranking of a first degree of association is greater than a second ranking of a second degree of association based on the multiple words related to the first degree of association having a more recent content relationship than the multiple words related to the second degree of association. Evidence demonstrates that Walmart generates second data based on first words (*i.e.*, data with new product offerings based on words in social media content like tweets, social media posts, Facebook videos, and trending products on social media). It mines data from social media, leveraging it to generate second data (*i.e.*, retail-related product insights) and determine the degree of association of the content (*i.e.*, semantic data/similar categorical data). The degree of association indicates how related a set of words is to each other. Walmart captures and analyzes the relationship of social media words/activities such as topics, products, events, and locations. Walmart utilizes a data-driven approach to assign weights to attributes, with those having a greater impact on customer decision-making given higher importance in the scoring process. Walmart prioritizes the ranking of product items based on the relevancy of content data, recency of content, current trends, and scoring algorithms. Walmart mines multiple words and social media mentions, examines the relevance of the data and current trends, assigns weights to attributes, and utilizes scoring algorithms, where attributes with a greater impact on customer decision-making are ranked higher, thus enhancing item searchability. The below screenshots show Defendant's product content organized based on a social media content management system (CMS) design and Defendant's content scoring system prioritizing product types and using data-driven weights to enhance quality and relevance. Moreover, the below screenshots show the generation of retail data on Walmart's site based on social media data, and Defendant's content scoring system prioritizing product types and using data-driven weights to enhance quality and relevance and indications of real-time social media content data analytics, specifically focusing on the recency of the data.

Defendant uses data-driven attribute weighting to prioritize items/attributes that most influence customer decisions, enhancing item searchability and relevance. Further, the below screenshots indicate that Defendant's semantic search engine delivers similar categorical results based on the user's social media interactions including by the extraction of user data from a Facebook profile to recommend gifts on Walmart application. Additionally, Defendant uses an architecture primarily focused on analytics and search bidding based on social media platforms, such as Facebook and how how Defendant tracks and analyzes consumer activity, including information about trending topics on Twitter, and that Defendant analyzes the relevance of keywords and optimizes the bidding strategy for each keyword to achieve better results.

Big Data Analytics Solutions at Walmart

1) Social Media Big Data Solutions

Social Media Data is unstructured, informal and generally ungrammatical. Analysing and mining petabytes of social media data to find out what is important and then map it to meaning products at Walmart is an arduous task. Social Media Data driven decisions and technologies are more of a norm than an exception at Walmart. A big part of Walmart's data driven decision are based on social media data- Facebook comments, Pinterest pins, Twitter Tweets, LinkedIn shares and so on. WalmartLabs is leveraging social medial analytics to generate retail related big data insights.

(*E.g.*, https://www.projectpro.io/article/how-big-data-analysis-helped-increase-walmarts-sales-turnover/109).

Big data refers to the vast amount of structured and unstructured data generated from diverse sources, such as sales transactions, customer interactions, social media, and supply chain operations. This data is characterized by its volume, velocity, and variety, making it too complex for traditional data processing methods to handle. However, with advancements in technology and data analytics, businesses can now harness the power of big data to derive actionable insights and make data-driven decisions.

Walmart, with its massive customer base and extensive supply chain network, generates an enormous amount of data on a daily basis. By strategically collecting, storing, and analyzing this data, Walmart is able to gain a competitive edge, improve operational efficiency, and deliver personalized experiences to its customers.

Big data refers to the vast amount of data that is generated from various sources, both structured and unstructured. It encompasses the volume, velocity, and variety of data and includes information from customer transactions, social media interactions, sensor readings, and more. The term "big data" is derived from the immense size of datasets that cannot be easily managed or processed using traditional data processing methods.

Walmart collects and analyze unstructured data from diverse sources such as social media platforms to generate second data (i.e., based on social networking activity data)

(*E.g.*, https://robots.net/fintech/how-walmart-uses-big-data/).

- **Launching New Products**

Walmart is leveraging social media data to find about the trending products so that they can be introduced to the Walmart stores across the world. For instance, Walmart analysed social media data to find out the users were frantic about "Cake Pops" .Walmart responded to this data analysis quickly and Cake Pops hit the Walmart stores.

(*E.g.*, https://www.projectpro.io/article/how-big-data-analysis-helped-increase-walmarts-sales-turnover/109).

The new homepage offers a product-focused experience that better mirrors the way our customers love to shop, highlighting the items that matter most to them at any given moment – whether it's game day or holiday. The feature-packed homepage has rich imagery, live video and is optimized to better bring Walmart's massive assortment to life, including a new social-inspired scroll so customers can browse our selection just as they'd scroll their favorite social media apps. Hats off to the Walmart Global Tech, Product and Design teams that collaborated closely to envision and bring to life this dynamic new way to discover and shop walmart.com.

(*E.g.*, https://corporate.walmart.com/news/2023/04/03/walmart-turns-up-the-excitement-and-discovery-with-brand-new-walmart-com-experience).

The e-commerce world is constantly evolving, and Walmart, being a major player, has recently made significant updates to its content scoring system. By placing heightened emphasis on product type attribution, introducing new product types, and employing a data-driven model to assign attribute weights, Walmart is set to elevate the quality and relevance of product content, profoundly impacting customer decision-making processes. These pivotal changes mark Walmart's unwavering commitment to enhancing the overall e-commerce experience, empowering both suppliers and customers alike.

Data-Driven Attribute Weights: To ensure that customers receive the most relevant and impactful information, Walmart now employs a data-driven approach to assign weights to attributes. This means that attributes with a greater impact on customer decision-making are given higher importance in the scoring process. Additionally, this data-driven approach will significantly impact item searchability, so it is crucial to optimize accordingly.

(*E.g.*, https://vendocommerce.com/walmarts-updated-content-scoring-model-its-implications/).

Social media and mobile big data analytics can help understand customer behavior: Walmart uses social media and mobile big data analytics to understand customer behavior and preferences. By analyzing social media data, Walmart can identify trends and respond to customer needs quickly. The company also uses mobile big data analytics to provide personalized recommendations to customers and improve their shopping experience.

Walmart's big data analytics journey provides valuable insights into how big data can be leveraged to improve customer experience and increase sales. By analyzing data in real-time, Walmart was able to optimize its supply chain management, improve product availability, and provide personalized recommendations to customers. As big data continues to grow in importance, companies like Walmart will need to continue to innovate and leverage big data analytics to stay competitive in the market.

(*E.g.*, https://airtics.org/blog/walmart-leveraging-big-data-to-improve-business-operations/).

Walmart.com's Improved Search Engine Powered by 'Social Genome'

On August 30th, Walmart.com rolled out an enhanced "semantic" search engine, named Polaris, for both its e-commerce and m-commerce channels. The feature was developed by a fifteen-engineer team within the @WalmartLabs division, a collection of tech whizzes brought together through the acquisition of a number of tech startups, including Kosmix.

The objective of Polaris is to deliver more meaningful results when Walmart.com shoppers enter keywords in the site's search field, and it does so by using a constellation of methods that consider the shopper's relevant interests and thereby intuit his or her intent in doing the search.

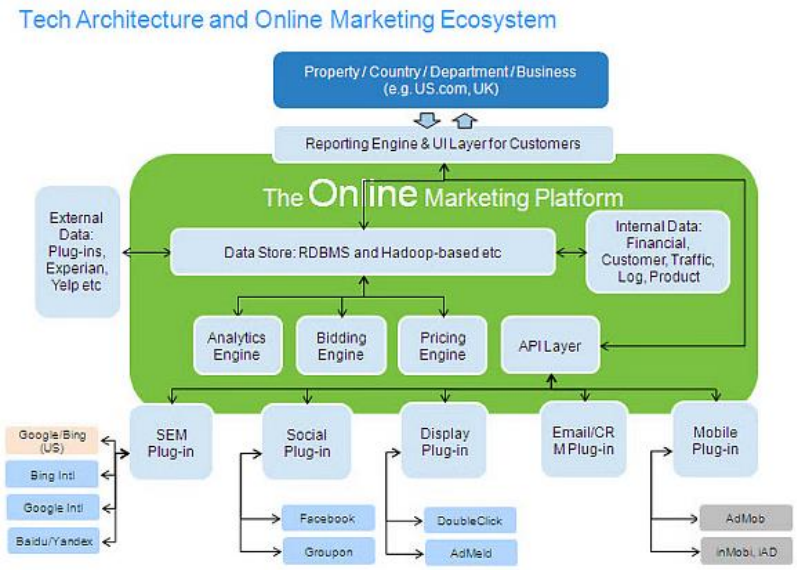
The technology is based on @WalmartLabs "Social Genome," defined by the division as, "a giant knowledge base that captures interesting entities and relationships of the social world ... people, events, topics, products, locations, and organizations." The Social Genome, the @WalmartLabs site goes on to say, is (cue the sci-fi music) "in a sense, the social world — all the millions and billions of tweets, Facebook messages, blog postings, YouTube videos, and more — a living organism itself, constantly pulsating and evolving."

According to information on the @WalmartLabs website, the Social Genome would allow, for example, the engine to determine based on a shopper's social media interactions that they would be more apt to purchase a gourmet brand of coffee if just entering the keyword "coffee."

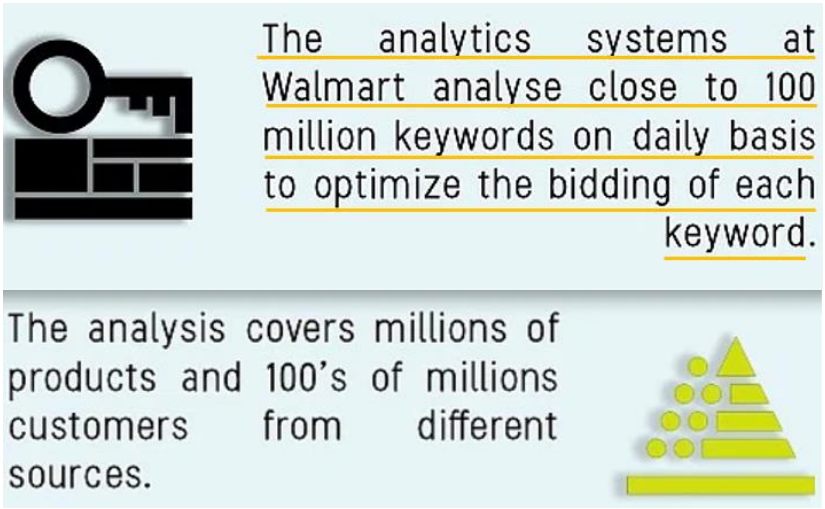
There is of course a lot more to it, but I thought I would try a simple test. Knowing that most online shoppers don't think ahead (they just peck and go), I tried a vague search term — "glasses." On Walmart.com, the search returned a nice, neat vertical column of various drinking glasses on the first page. But, notably, above that was an offer to "Shop by Category" presenting a choice of "drinkware," "eyeglasses" and "dining & entertainment."

(*E.g.*, https://retailwire.com/discussion/walmart-coms-improved-search-engine-powered-by-social-genome/).

(*E.g.*, https://www.projectpro.io/article/how-big-data-analysis-helped-increase-walmarts-sales-turnover/109).



Walmart tracks and targets every consumer individually. Walmart has exhaustive customer data of close to 145 million Americans of which 60% of the data is of U.S adults. Walmart gathers information on what customer's buy, where they live and what are the products they like through in-store Wi-Fi.The big data team at Walmart Labs analyses every clickable action on Walmart.com-what consumers buy in-store and online, what is trending on Twitter, local events such as San Francisco giants winning the World Series, how local weather deviations affect the buying patterns, etc. All the events are captured and analysed intelligently by big data algorithms to discern meaningful big data insights for the millions of customers to enjoy a personalized shopping experience.



(*E.g.*, https://www.projectpro.io/article/how-big-data-analysis-helped-increase-walmarts-sales-turnover/109).

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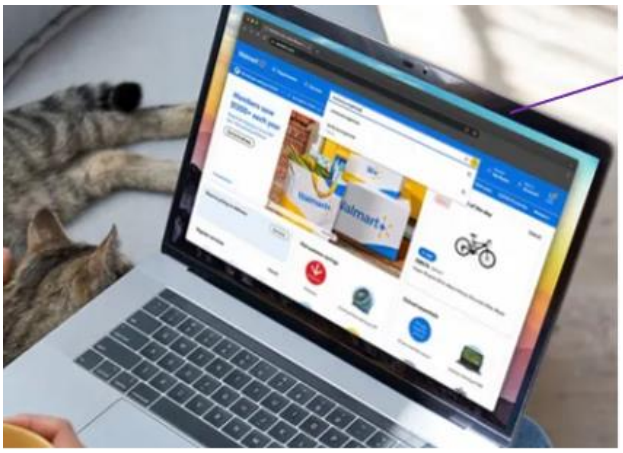
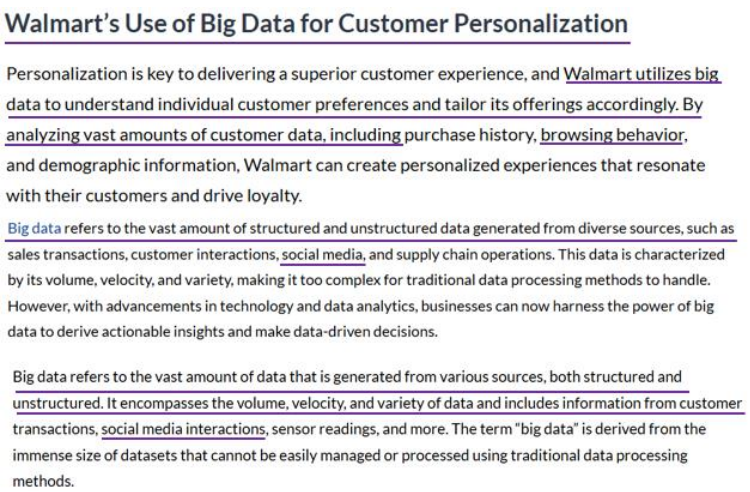
14. As shown below, Defendant (via the Accused Instrumentality) performs the step of identifying, at a computing system, a word in browse information of a target user device, a second word determined based on the second data to be related to the word, and a content item having an associated keyword that corresponds to the second word. Evidence demonstrates a process carried out by a computing system to identify words in the browsing information of any target user device (*e.g.*, mobile or laptop). Walmart suggests deeper insights and product recommendations (*e.g.*, retail-related keywords) by analyzing unstructured social media data in real-time with NLP and various AI techniques. This data can include social media posts, images, videos, current social trends, and the user's online browsing behavior. Walmart displays personalized content with

mined semantic insights (*e.g.*, related keywords from words associated with social media text and visual analytics in real time). As shown in information below, the insights which Walmart suggests based on social media analytics include keyword suggestions that correspond to words related to social media activity, such as Walmart uses user's social media browsing behavior and interactions to personalize content. Additionally, Walmart's use of second data (*i.e.*, data indicating association with social media words and recentness of content (*i.e.*, in real time) to identify deeper insights (*e.g.*, retail related word suggestions). Further, Walmart analyzes a second data (*i.e.*, social media posts, images, and videos) to determine second words (*i.e.*, several insights from social media textual and visual information) based on social media information, and Walmart gathers 'social media information' which from data related to user's activities on social media platforms, including users' browsing patterns. Walmart leverages social trends, browsing information, and other clickstream data to suggest words/recommendations that align with the user's interests and utilizes social networking and semantic or relevance matching to optimize sales within Walmart's search engine. Moreover, Walmart extracts/mines data from social platforms to gain deeper insights (*e.g.*, retail-related keywords), correlate social platform data with Walmart's data to create content relevant to retail insights derived from social data and utilizes browsing history and contextual information to optimize results and curate a list of items based on relevance matching and browsing patterns.



(*E.g.*, https://www.retaildive.com/news/walmart-personalization-app-website-upgrades/631834/).

(*E.g.*, https://corporate.walmart.com/news/2024/06/06/walmarts-retail-renaissance-brings-better-to-life-with-innovation-integrations).



Walmart's Use of Big Data for Customer Personalization

Personalization is key to delivering a superior customer experience, and Walmart utilizes big data to understand individual customer preferences and tailor its offerings accordingly. By analyzing vast amounts of customer data, including purchase history, browsing behavior, and demographic information, Walmart can create personalized experiences that resonate with their customers and drive loyalty.

Big data refers to the vast amount of structured and unstructured data generated from diverse sources, such as sales transactions, customer interactions, social media, and supply chain operations. This data is characterized by its volume, velocity, and variety, making it too complex for traditional data processing methods to handle. However, with advancements in technology and data analytics, businesses can now harness the power of big data to derive actionable insights and make data-driven decisions.

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(*E.g.*, https://robots.net/fintech/how-walmart-uses-big-data/).

Social media and mobile big data analytics can help understand customer behavior: Walmart uses social media and mobile big data analytics to understand customer behavior and preferences. By analyzing social media data, Walmart can identify trends and respond to customer needs quickly. The company also uses mobile big data analytics to provide personalized recommendations to customers and improve their shopping experience.

Walmart's big data analytics journey provides valuable insights into how big data can be leveraged to improve customer experience and increase sales. By analyzing data in real-time, Walmart was able to optimize its supply chain management, improve product availability, and provide personalized recommendations to customers. As big data continues to grow in importance, companies like Walmart will need to continue to innovate and leverage big data analytics to stay competitive in the market.

(*E.g.*, https://airtics.org/blog/walmart-leveraging-big-data-to-improve-business-operations/).

Walmart, one of the world's largest retailers, has been leveraging the power of big data for several years to enhance Customer Experience (CX) and maintain its competitive edge in the retail industry. By collecting and analyzing vast amounts of data from various sources, such as point-of-sale transactions, social media, online browsing behavior, and supply chain management systems, Walmart has been able to make significant improvements across its operations.

(*E.g.*, https://www.clootrack.com/blogs/walmarts-data-strategy-enhancing-cx-and-competitive-edge).

In addition to structured data, Walmart also deals with unstructured data, such as customer reviews, social media posts, and images. To handle this unstructured data, Walmart employs advanced data processing techniques, including natural language processing (NLP) and image recognition. These tools allow Walmart to extract insights and sentiments from text data and analyze visual content, aiding in understanding customer preferences and trends.

(*E.g.*, https://robots.net/fintech/how-walmart-uses-big-data/).

What Are the Categories of Personal Information Collected?

- **Device Information and Online Activity:** Device and online identifiers, keystroke patterns indicative of human or bot website/app usage, mobile and web network activity and related information (such as Mac address, IP address, cookie IDs, browser activity, and other information associated with your browsing history), and social media information

(*E.g.*, https://corporate.walmart.com/privacy-security/california-privacy-rights).

An AI-first search and product discovery platform leverages data from individuals' searches, such as past purchase history, viewed products, and other clickstream data, to deliver personalized experiences at every touchpoint — from search and product recommendations to tailored marketing campaign results that are ranked and ordered according to individual preferences.

Instead of merely responding to direct searches, AI will soon offer suggestions tailored to a customer's behavior, geographic location, time of year, and even current social trends, providing a proactive search experience. This predictive approach means customers will encounter products and offers that align with their interests seamlessly, without the need for detailed searches.

(*E.g.*, https://www.pymnts.com/artificial-intelligence-2/2024/walmart-other-retailers-tap-ai-powered-tools-to-personalize-consumer-journey/).

With over 23 million rabid followers across its various social media profiles, Walmart dominates the digital landscape like a retail giant awakening from slumber. The brand leverages platforms like Facebook, Instagram, Twitter and TikTok to tease out deals, introduce new products, and communicate with its legion of loyal customers.

(*E.g.*, https://www.33rdsquare.com/walmart-social-media-policy/#google_vignette).

TechCrunch: When you think of industry leaders in search technology, Walmart probably doesn't come to mind, but the retailer has just rolled out a new search engine called Polaris that uses social networking and semantic features to boost sales at Walmart.com. In fact, the company claims Polaris makes it 10 to 15 percent more likely that online shoppers will complete their purchases.

Polaris was built by a 15-person team within @WalmartLabs, including many engineers who came from companies Walmart purchased, such as Kosmix, OneRiot, Grabble, Small Society, and others. It builds on "Shopycat," an earlier Walmart.com feature that used social media data to recommend gifts. The tool also relies on semantic technology that was part of Kosmix's Social Genome. "It's a term that encompasses the connections between people, events, places, and products most importantly," explained Walmart's Sri Subramaniam. "And we analyze the relationships between all these different nodes and entities. So not only are these concepts formalized in a hierarchy, the relationships between them are gleamed."

(*E.g.*, https://www.datamation.com/trends/walmart-unveils-polaris-a-semantic-search-engine-for-products/).

Data-driven decisions are more of the norm than the exception at Walmart. A large portion of their data efforts are based on social data—tweets, blogs, pins, comments, shares, and so on. The team at WalmartLabs.is in charge of mining all of that data to generate retail-related insights. This is the first post in our ***Data Visualization Spotlight*** series, in which we show how various organizations use data visualization and analytics to solve day-to-day problems. You can replicate this tutorial using a Data Visualization Tool and see how the data converts to real-time social conversations into inventory.

As Arun Prasath, Principal Engineer, WalmartLabs, points out in an article, *"Social Media Analytics is all about mining retail-related insights from social channels, a perilous and personally exciting task to us. When our team spent the 22nd of November feverishly following the social retail pulse on Black Friday, we knew the world wasn't preparing for an apocalypse."*

The language used in social forums is heavily unstructured, informal, and often ungrammatical. Mining petabytes of such social data to filter out relevant data points and then map them to meaningful retail products is difficult. Popular text analytics and natural language processing techniques based on standard language models do not suffice. One of the several techniques WalmartLabs adopts to overcome this challenge is looking for several hand-verified n-grams [Related read: n-gram] around brands in a significant time window. As Prasath points out, there are several such techniques in the offing. *"It is only after conquering all of these multifold challenges that meaningful recommendation can be made….Our social media analytics project operates on top of a searchable index of 60 billion social documents and helps merchants at Walmart monitor sentiments and popular interests in real-time, or inquire into trends in the past. One can also see geographical variations of social sentiments and buzz levels. There are also tools that marry search trends on walmart.com, sales trends in our brick-and-mortar stores, and social buzz all in one place, to help make correlations. Together, these tools provide powerful social insights."*

People are constantly talking about products on social media. A retailer must transform this humongous amount of social data into meaningful information and make it available in a form that their merchandisers can understand and use for assortment and inventory planning. The secret to successful retailing is the delivery of the right product at the right place and time.

(*E.g.*, https://www.fusioncharts.com/blog/how-walmart-uses-data-visualization-to-convert-real-time-social-conversations-into-inventory/).

What Are the Categories of Personal Information Collected?

- Internet, application, and network activity, such as cookie IDs and browser visits

(*E.g.*, https://commerce.walmart.com/content/walmart-commerce-tech/en_us/privacy-policy.html).

GenAI search can also account for a variety of other factors, such as location, search history and other contextual information, to further refine results for customers. We use a combination of Walmart proprietary data and technology and large language models, including those available in Microsoft Azure OpenAI Service, as well as retail-specific models built by Walmart. The new design serves up a curated list of the best items a shopper is looking for.

(*E.g.*, https://corporate.walmart.com/news/2024/01/09/from-aisles-to-algorithms-walmarts-tech-forward-innovations-for-time-saving-shopping).

15. Defendant (via the Accused Instrumentality) performs the step of providing a portion of the content item (*i.e.*, product recommendations or personalized contents) retrieved from a data repository to the target user device (such as mobile device). For example, Walmart collects, analyzes, and retrieves data from various sources such as social platforms, users' online browsing and search activities, user characteristics, engagement metrics and users' preferences, to provide personalized product recommendations and optimize product prices and deals to the target user device (such as a mobile phone).

The data collected from various sources is stored in large data warehouses, organized in a structured format that allows for efficient retrieval and analysis. These data warehouses provide a centralized repository for different types of data, allowing Walmart's analysts and data scientists to access and analyze the data easily.

In the next sections, we will explore how Walmart stores and processes this data, and the various ways in which it is utilized to optimize inventory management, supply chain operations, customer personalization, pricing, and fraud detection.

With a massive volume of data generated from various sources, Walmart requires robust storage and processing capabilities to effectively manage and analyze this data. The company has established a sophisticated infrastructure that enables efficient data storage, processing, and analysis, ultimately supporting their data-driven decision-making processes.

Overall, by leveraging big data for inventory management, Walmart can optimize stock levels, improve product availability, reduce costs, and enhance operational efficiency. The utilization of data-driven approaches in inventory management allows Walmart to stay agile and responsive in meeting customer demands while maintaining an effective and profitable supply chain.

(*E.g.*, https://robots.net/fintech/how-walmart-uses-big-data/).

What Personal Information Do We Collect?

Device and Online Identifiers, such as account login information, Mac address, IP address, cookie IDs, mobile ad IDs, and social media information

Internet and Other Network Activity Information, such as information about your browsing or search activity as well as your interactions with our websites, mobile applications, emails, or advertisements such as keystroke patterns (these tell us if it is you who is interacting with us, or a bot)

Inferences: Individual preferences and characteristics, such as inferences drawn from and related to shopping patterns and behaviors, intelligence, and aptitudes

(*E.g.*, https://corporate.walmart.com/privacy-security/walmart-privacy-notice).

Walmart, one of the world's largest retailers, has been leveraging the power of big data for several years to enhance Customer Experience (CX) and maintain its competitive edge in the retail industry. By collecting and analyzing vast amounts of data from various sources, such as point-of-sale transactions, social media, online browsing behavior, and supply chain management systems, Walmart has been able to make significant improvements across its operations.

(*E.g.*, https://www.clootrack.com/blogs/walmarts-data-strategy-enhancing-cx-and-competitive-edge).

Obtained from External Third-Party Sources

We may obtain personal information about you from other sources to help us correct or supplement our records, improve the quality or personalization of our services

(*E.g.*, https://corporate.walmart.com/privacy-security/walmart-privacy-notice).

One way Walmart utilizes big data is by tracking and analyzing customer purchasing patterns and preferences. By doing so, the company can make better product recommendations and improve its inventory management. This enables Walmart to ensure that it has the right products in stock at the right time, leading to more satisfied customers who can easily find what they are looking for.

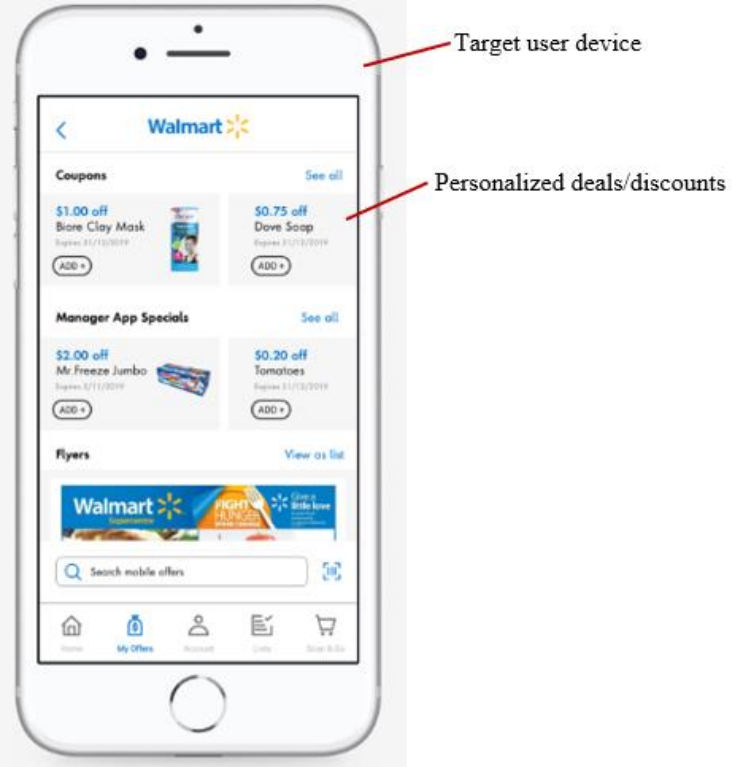
Additionally, Walmart optimizes pricing strategies by leveraging big data insights. By analyzing the data, the company can determine the optimal price points for different products, driving increased sales and profitability. This data-driven approach not only benefits Walmart but also offers customers competitive prices, helping to enhance their shopping experiences.

(*E.g.*, https://www.clootrack.com/blogs/walmarts-data-strategy-enhancing-cx-and-competitive-edge).

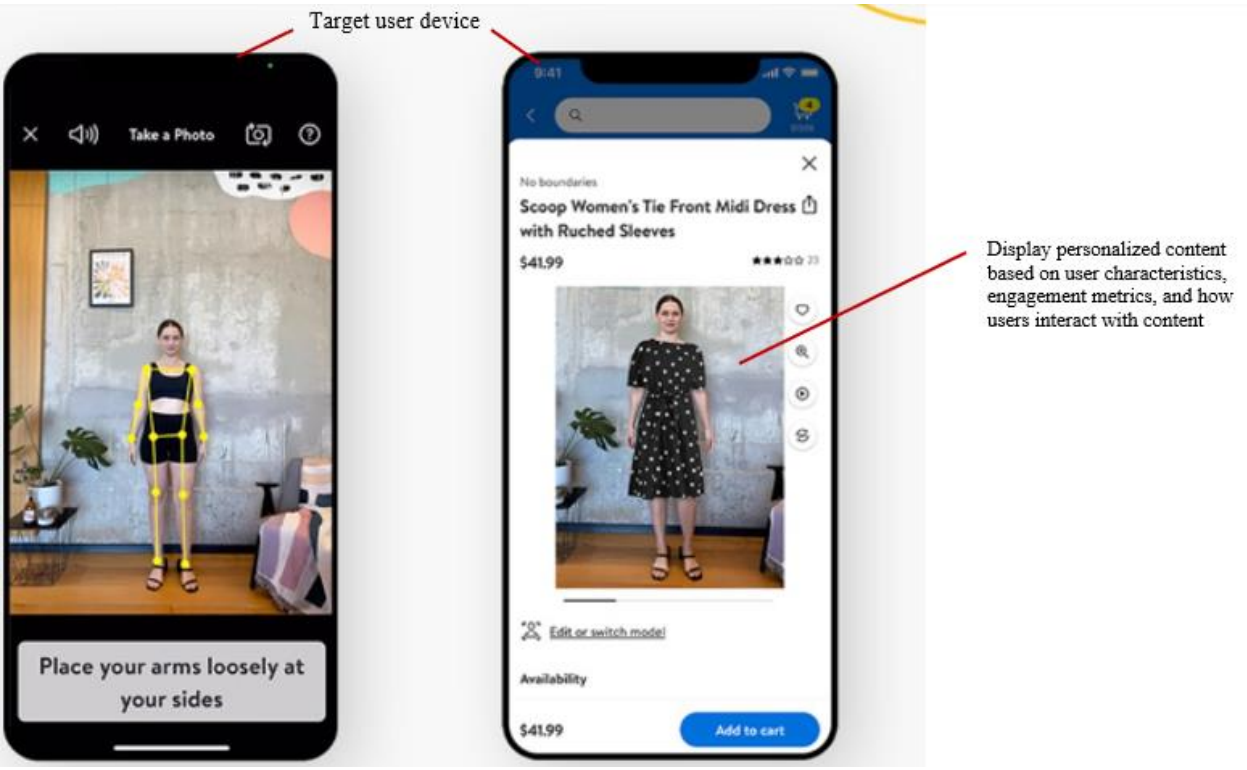
With over 23 million rabid followers across its various social media profiles, Walmart dominates the digital landscape like a retail giant awakening from slumber. The brand leverages platforms like Facebook, Instagram, Twitter and TikTok to tease out deals, introduce new products, and communicate with its legion of loyal customers.

Walmart introduce product items based on information from social media platforms

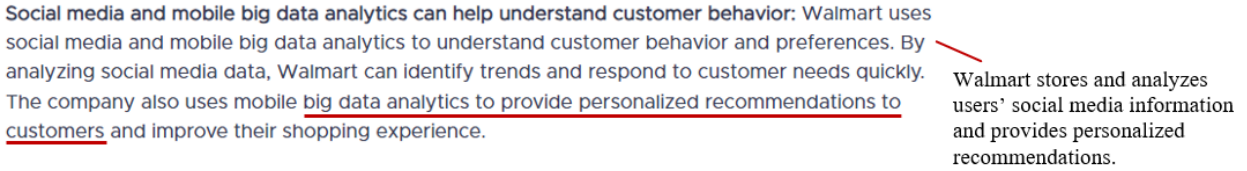
(*E.g.*, https://www.33rdsquare.com/walmart-social-media-policy/#google_vignette).



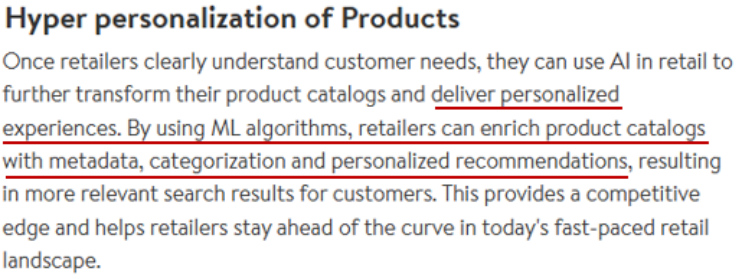
(*E.g.*, https://dribbble.com/shots/7908353-My-Walmart-App-Offers-Concept).



(*E.g.*, https://corporate.walmart.com/news/2022/09/15/walmart-levels-up-virtual-try-on-for-apparel-with-be-your-own-model-experience).



(*E.g.*, https://airtics.org/blog/walmart-leveraging-big-data-to-improve-business-operations/).



(*E.g.*, https://tech.walmart.com/content/walmart-global-tech/en_us/blog/post/a-closer-look-at-top-artificial-intelligence-trends-in-retail.html).

- Personalized product recommendations based on browsing and purchase history

(*E.g.*, https://www.marketingscoop.com/consumer/walmart-marketing-strategy/).

16. **Induced Infringement.** Defendant has also actively induced, and continues to induce, the infringement of at least claim 28 of the '138 Patent by actively inducing its customers to use Defendant's https://www.walmart.com/ product, including https://www.walmart.com/, in an infringing manner as described above. Upon information and belief, Defendant has specifically intended that its customers use https://www.walmart.com/ including https://www.walmart.com/ in a manner that infringes at least claim 28 of the '138 Patent by, at a minimum, providing access to support for and instructions for https://www.walmart.com/ including https://www.walmart.com/ to its customers to enable them to infringe at least claim 28 of the '138 Patent, as described above. Even where performance of the steps required to infringe at least claim 28 of the '138 Patent is accomplished by Defendant and Defendant's customer jointly, Defendant's actions have solely caused each of the steps to be performed. Defendant has been aware of its infringement of the '138 patent since at least the filing of this lawsuit.

17. Plaintiff has been damaged as a result of Defendant's infringing conduct. Defendant is thus liable to Plaintiff for damages in an amount that adequately compensates Plaintiff for such infringement of the '138 Patent, *i.e.*, in an amount that by law cannot be less than would constitute a reasonable royalty for the use of the patented technology, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

18. The claims of the '138 Patent are method claims to which the marking requirements are not applicable. Plaintiff has therefore complied with the marking statute.

V. JURY DEMAND

Plaintiff, under Rule 38 of the Federal Rules of Civil Procedure, requests a trial by jury of any issues so triable by right.

VI. PRAYER FOR RELIEF

WHEREFORE, Plaintiff respectfully requests that the Court find in its favor and against Defendant, and that the Court grant Plaintiff the following relief:

a. Judgment that one or more claims of United States Patent No. 11,049,138 have been infringed directly and indirectly, either literally and/or under the doctrine of equivalents, by Defendant;

b. Judgment that Defendant account for and pay to Plaintiff all damages to and costs incurred by Plaintiff because of Defendant's infringing activities and other conduct complained of herein, and an accounting of all infringements and damages not presented at trial;

c. That Plaintiff be granted pre-judgment and post-judgment interest on the damages caused by Defendant's infringing activities and other conduct complained of herein; and

d. That Plaintiff be granted such other and further relief as the Court may deem just and proper under the circumstances.

August 15, 2024

DIRECTION IP LAW

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