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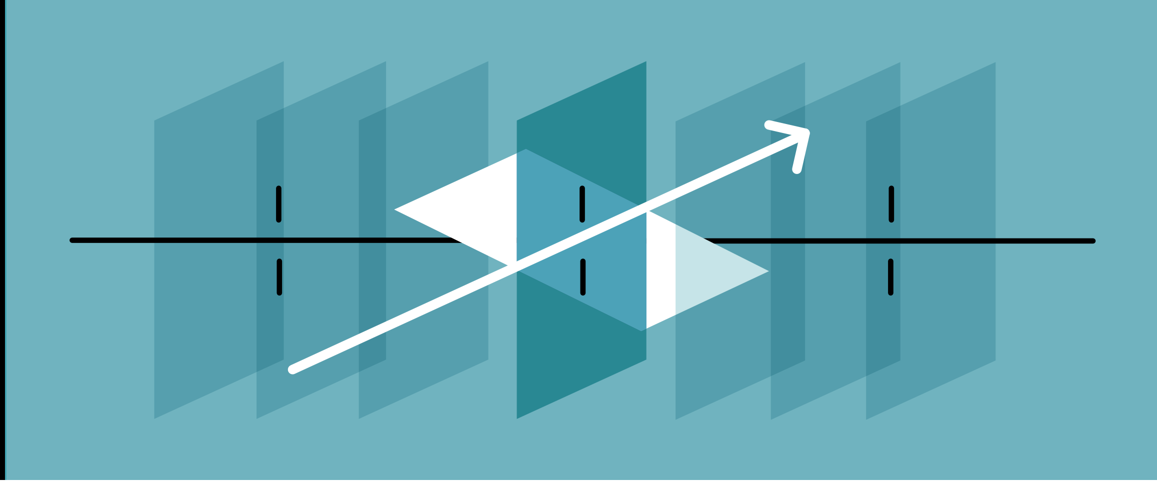

AI and the Future of Content Discovery

HBR Analytic Services
BRIEFING PAPER

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Redefining User Engagement with Intelligent Content Delivery

In today's content-saturated world, attention is currency—and experience is everything. Media & Entertainment companies now face a dual challenge: keeping users engaged in an environment overflowing with choices and translating that engagement into meaningful business outcomes.

Whether the company is a video streamer, digital publisher, or music or gaming platform, the stakes are high. A delay in content discovery, a missed recommendation, or an uninspired interface can mean lost revenue, from subscriber churn to reduced ad performance. Traditional recommendation engines, built on static audience segments, simply can't keep up with the dynamic preferences of modern consumers.

Media and telecommunications companies are harnessing immersive experience in sports, concerts, and intellectual property-driven content to deepen consumer engagement. By combining leading-edge technology with compelling content, companies are creating more personalized and engaging experiences, reshaping audience interaction, driving loyalty, and unlocking new revenue streams in a highly competitive landscape.

Artificial intelligence (AI) is enabling media companies to completely rethink content discovery and user engagement. By embedding AI across the user journey, from acquisition and activation to retention and loyalty, organizations are creating smarter, more adaptive experiences that increase satisfaction and drive growth.

We've sponsored research by Harvard Business Review Analytic Services to explore this transformation in depth. Through interviews with chief executives, professionals, thought leaders across publishing, and media consulting firms, the findings reveal how media companies are leveraging AI to reimagine the discovery experience, reduce churn, and unlock new revenue opportunities for a break-away enterprise. From intelligent content tagging and conversational interfaces to gamified engagement and VIP content hubs, the future of media is being shaped by innovation grounded insights.

The organizations that place personalized discovery at the center of their strategy and leverage AI as an enabler will be best positioned to thrive in a market defined by choices and driven by experiences.

Read on to uncover what it takes to build meaningful, intelligent connections between content and audiences.

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AI and the Future of Content Discovery

Consumers are drowning in content, and that's threatening revenue, engagement, and advertising dollars for video and music streamers, broadcasters, and publishers. With so much to choose from, today's consumers frequently get frustrated while seeking a satisfying piece of media content, and they may ultimately find another way to spend their time. The issue is putting content discovery at center stage.

IN THE ONLINE VIDEO SPACE, for example, audiences now have more than 2.7 million individual video titles to choose from, and it takes an average viewer 10-and-a-half minutes to find something to watch, according to New York City media research firm The Nielsen Company (US) LLC's 2023 "State of Play" report. Other media, including music and publishing, are equally saturated. Media companies know that with an abundance of choices, more than 10 minutes is too long.

"We're very much an attention economy," says Matt Rivet, partner in the Los Angeles office of Boston-based telecommunications, media, and technology consultancy Altman Solon US LP, "and so these platforms are competing with any other attention-grabbing medium today, whether it's social media, gaming, or publishing to some extent. Retaining the consumer on the platform is so, so critical for them."

Current discovery and retention tools such as recommendation engines are proving inadequate for helping consumers identify compelling content fast enough to ensure they stay engaged. To address the shortcomings that put attention-based revenue at risk, media companies are starting to leverage advances in artificial intelligence (AI) that can identify more granular insights into user preferences and behavior more quickly and robustly than previous approaches can. These advances create richer, faster, hyperpersonalized user experiences that boost discovery, retention, and revenue opportunities.

This paper will examine the current disconnects between audiences and

HIGHLIGHTS

With the proliferation of competing media, increasing prices, the emergence of ad-supported streaming services, and an abundance of content, consumers are **feeling overwhelmed with options** and **more conscious of the higher cost** of news and entertainment.

Media companies are **increasingly turning to artificial intelligence** to overcome their challenges in discovery and retention.

That capability is **powering new ways to conduct deeper and more detailed analysis** of both individual users and media content to find new connections that can be used to **streamline and speed the discovery experience.**

> **"The investment and resources that [AI-supported] models are being given to do the hard work are much greater than they were even in the last two or three years, and that is translating into more time and investment and therefore better experiences for consumers."**
>
> Matt Rivet, partner at Altman Solon US LP

content discovery functions and the resulting impact on video and music streamers, broadcasters, and publishers. It will also explore what consumers crave when it comes to content discovery, and it will reveal the current and emerging ways media companies are leveraging AI to turbocharge discovery and retention.

"The investment and resources that [AI-supported] models are being given to do the hard work are much greater than they were even in the last two or three years," says Rivet, "and that is translating into more time and investment and therefore better experiences for consumers."

The Cost of Saturation

For media companies, attention is revenue. In the past, retaining a streaming, cable, or periodical customer often required only ensuring enough relevant content to prevent cancellation or, in the ad-supported TV world, enough interest to not change the channel. Companies could rely on large audiences to offset their high-priced investments in content with wide appeal, such as live sports, headline-grabbing reporting, or "tentpole" productions—big-budget, popular films or other works designed to support the financial performance of a media company.

Today, media companies skate much closer to the edge. With the proliferation of competing media, increasing prices, the emergence of ad-supported streaming services, and an abundance of content, consumers are feeling overwhelmed with options and more conscious of the higher cost of news and entertainment. Subscription-pausing habits are on the rise—a monthly median 34.2% of premium streaming video subscribers have rejoined a service they had canceled within the prior year, according to the *Wall Street Journal*, and some customers don't come back.[1]

Altman Solon's February 2024 "14th Annual Consumer Video Study" found that, excluding Los Gatos, Calif.-based Netflix Inc., streaming video on demand companies are collectively losing about $8.1 billion per year globally, with negative margins of approximately 28%. Luxembourg-based Spotify Technology S.A., the streaming music market leader, finally achieved its first year of net profitability in 2024. While Hyderabad, India-based market research firm The Business Research Company's January 2025 "Global Market Report" forecasts global magazine and periodical publishing revenue will grow at a compound annual rate of 3.3%, these firms face similar struggles to engage and retain their audiences while minimizing costs.

In video media, "all these streamers are thinking about essentially [is] what is the best amount and type of content that can be put on these platforms," says Rivet. "They need to be able to attract audiences and then retain them," striking the right balance in content quantity, new versus library content, and so on. "What is the perfect optimization of all those factors that allow us to attract and retain subs? I think they realize that more is not always more."

Consumers have also become highly accustomed to hyperpersonalization in social media, shopping, and elsewhere, and they bring those same expectations to their media experiences. As a result, they leave more quickly when their needs aren't being met. Nielsen's "State of Play" report also found 20% of would-be video viewers reported not knowing what they wanted to watch before tuning in to a platform, and when they couldn't find something to watch, they did something else instead.

The threat of losing consumers' attention puts more pressure on the discovery process to make them feel seen and valued and, in turn, deepen their value to the media brand by maintaining subscriptions or spending more time on the platform.

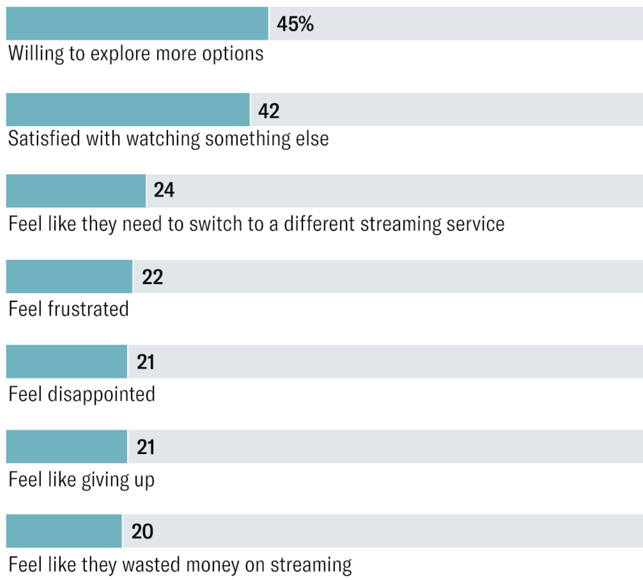
At the same time, economic realities can put pressure on media companies to push higher-cost premium content or premium ads in the discovery process, something they must do without turning off the consumer. But it can be challenging to create a user experience that equally balances user experience with monetization goals. Tilt too far toward monetization goals and "you will see drop-off pretty quickly," says Sanjay Bhakta, chief products and technology officer at New

FIGURE 1

Consumer Frustration

While many consumers persevere when they can't find something to watch, some also report frustration and disappointment

Percentage who feel this very or somewhat often



Source: MAGNA, Roku, June 2024

York City-based mass media firm Condé Nast International Inc., whose brands include *The New Yorker*, *Vogue*, and *Vanity Fair*. "Most often, drop-off happens because of the overall site experience. It's not necessarily the content that they're reading; it's the number of calls to action that you have on your website."

Altman Solon's Rivet says his firm has found the experiences that most frustrate video viewers are "streaming paralysis," in which they can't find a satisfactory title to watch; search functions that don't perform as they wish; fragmentation of content across many different platforms that don't communicate; and limited content windows, when titles are pulled from platforms due to licensing terms.

"There is a group of consumers that we hear from as part of our work that is like, 'Yeah, actually, I'm just good with pay TV, because it's easy. It's intuitive,'" Rivet says. "The platforms are kind of difficult to navigate and just find stuff in general. Some consumers are drawn to linear TV because they can tune in to a curated experience, lean back, and relax," he notes, which may keep them watching longer than they would on an on-demand-centric streaming platform. According to "From 'Power On' to 'Power Off,'" a June 2024 survey of 2,568 U.S. adults conducted by MAGNA, a New York City-based media investment and intelligence subsidiary of the Interpublic Group of Companies, and San Jose, Calif.-based streaming service Roku Inc., 72% of streaming users face obstacles when choosing content. When they can't find something to watch, 45% of participants indicated they were sometimes or very often willing to explore more options, and 42% were somewhat or very often satisfied with watching something else if they couldn't find or access the content they wanted. FIGURE 1 However, 24% also indicated they sometimes or often feel like they need to switch to a different streaming service or feel frustrated (22%) or disappointed (21%).

Such data on viewer behaviors—such as whether a viewer keeps searching for content and for how long and whether they are satisfied watching something that is not a personal favorite or switch off the platform—provides insights into how recommendation engines need to change to improve discovery and retention.

Media companies must also balance their desire to avoid negative impressions of the platform experience with the financial implications of the investments required to address the deficits.

"Media companies are thinking about how to do everything very profitably," says Rivet, "and so content discovery, so long as it's an issue around churn, they're absolutely going to care about it. But making major investments into content discovery is going to be largely a function of financial positioning and whether or not they think it's the right thing to do given the litany of other corporate priorities. Right now, number one is cost savings."

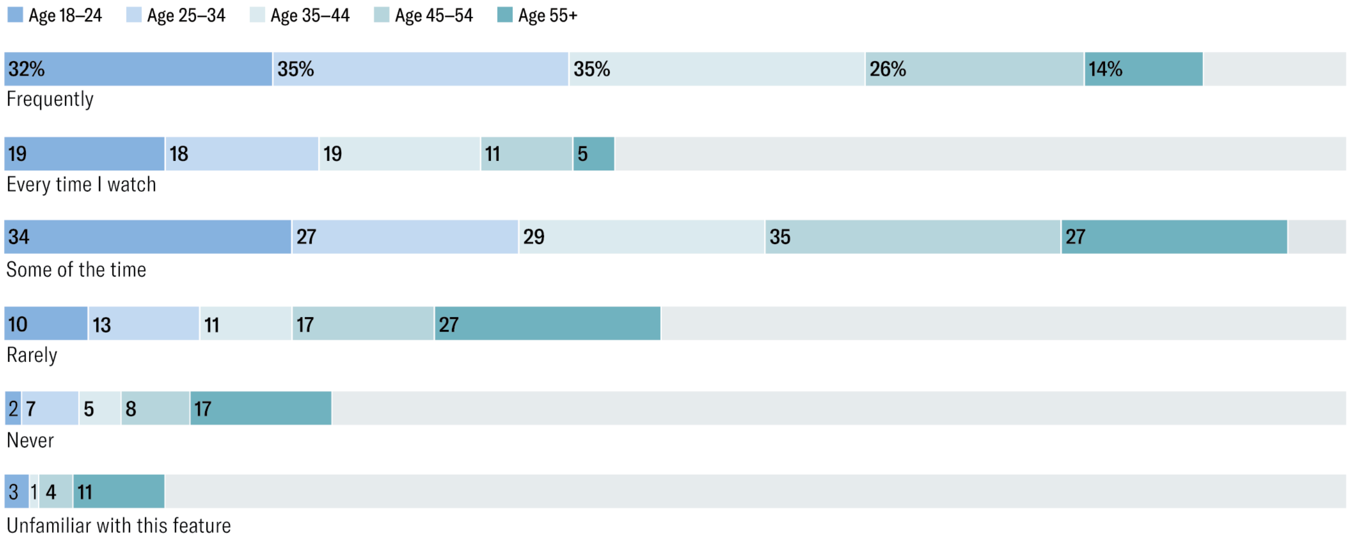
The Role of AI

Media companies have long leveraged AI and other forms of analytics to better understand their customers and their behavior, and they used these insights to fuel everything

FIGURE 2

Room for Improvement

Percentage of viewers who say they use recommendation features



Not shown: 0% of viewers age 25–34 said they were "unfamiliar with this feature."

from acquisition to retention. But signs are clear that recommendation engines, a cornerstone of personalization for any digital platform, may have plenty of room for improvement.

According to Altman Solon's April 2023 "13th Annual Consumer Video Study," which surveyed 5,011 U.S. consumers in July and August 2022, the percentage of respondents who frequently use a streaming service's "recommended for me" feature, which suggests movies/TV shows based on their interests and viewing history, barely exceeds half of most age groups. While 35% of 35-to-44-year-olds and 25-to-34-year-olds use it frequently and 19% and 18%, respectively, use it every time they watch, those numbers drop considerably for older viewers; just 37% of 45-to-54-year-olds and 19% of 55+ viewers use recommendations frequently or every time they watch. FIGURE 2

The results revealed in Figures 1 and 2 may indicate that because a significant number of viewers are highly inclined toward or use the recommendations in the platform, enhancements of the performance of recommendation engines through tools such as AI may extend time spent viewing. For example, viewers who keep searching after initial disappointment may end up watching more content. People who are satisfied with a second-choice piece of content could then go on to deepen their loyalty to the platform. And retaining those who previously left the platform in frustration through delivery of more-relevant suggestions could increase loyalty and reduce churn.

With a plethora of competitors making user experience and personalization critical company differentiators, AI's increasing capability to handle computationally intensive applications and massive data sets is enabling these companies to gain a richer and more real-time view of the consumer. AI is also helping platforms perform deeper and more detailed analysis of content to identify elements that resonate with individual consumers.

"Getting that customer to land on your site is a huge challenge," says Condé Nast's Bhakta. "And on your site, you have to do everything possible to show them the right thing, because they can bounce off just as easily as they came there. I believe personalizing and creating an engaging user experience is going to continue to be exceptionally important."

Whether a quest for a media experience starts in a general search or on a specific media platform, a media company has precious little time to present content options to satisfy the consumer's desires. So the ability to rapidly summarize what's known about an individual user's preferences, from owned as well as third-party data, is one of the top use cases for AI in discovery, says Lisa Jaeger, partner in the Frankfurt, Germany, office of consultancy Simon-Kucher & Partners.

With all that consumer data in hand, "you can then identify new content that could be relevant to that specific person, because some similar people also like that," she says, "and you can create customer profiles or customer segments in a way that you couldn't have done before. That is a completely new way of [doing] customer segmentation that is now possible. If you now do that in the AI-enabled world, you can analyze what that person actually has read in the last few hours and create these dynamic user profiles."

AI is expected to enhance both context-aware personalization—which combines user data with factors such as location, time of day, and current activities—and real-time personalization, so recommendations can change dynamically as new data about an individual user becomes available. It also turbocharges companies' ability to test and learn.

"It's almost like infinite A/B testing so that you can figure out which of these experiments are best suited for a particular consumer in a particular [situation]," says Rivet, referring to the industry practice of testing the appeal of two versions of the same content.

Transforming Discovery

Among the ways media companies are leveraging AI in new ways to enhance content discovery is to perform frame-based analysis of video and musical content. Beyond simple tags such as title, genre, or production date, this automated analysis can identify content characteristics such as objects—perhaps a car is featured in a scene—as well as mood, behaviors, tempo, or instruments played, and use them to enhance search and discovery.

Detailed frame-level data or deep music tagging enables the company to not only recommend other films or music with similar granular features but also fine-tune many aspects of the user experience, such as A/B testing program tiles, thumbnail images, or clips used to market that content, often found on the landing pages of a digital media platform. This detail can also be used to insert context-relevant ads at just the right moment, connect viewers with ancillary content such as fan communities or links to the film's soundtrack, and inform future content creation and editing.

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"Streamers are saying, listen, we've got to be more efficient with our dollars," says Rivet. While they'll continue to spend money on sports, tentpole content, and technology, "with everything else, they're going to be super discerning about whether or not they're getting an ROI. They're using the information they glean from their platforms and from doing things like frame-based analysis to figure out what works and what doesn't."

Condé Nast is leveraging AI to enrich discovery by creating metadata from its deep archives of content. A site visitor searching for a recipe using eggplant, for example, could log into the publisher's Epicurious app and see various versions from *Bon Appétit*, *La Cucina Italiana*, and the app's own recipes. The company is also using AI to ingest and tag images, so, for example, someone could enter "white purse" and see every instance of a white purse being included in a fashion show, then refine that to a white purse with wood handles, and so on.

"I think it certainly makes it more engaging for the user," says Bhakta. "In the past, it could have been very difficult to find that piece of content through traditional search."

In addition to creating metadata and building taxonomies, Condé Nast is also using AI to ingest old contracts pertaining to development of archived assets such as articles and images. It is implementing a rights management system and linking it to the company's digital asset management system to leverage its rich archives while staying in compliance with licensing—most often, digital rights were not specifically delineated in old agreements, Bhakta says, a hurdle for many long-standing publishers.

AI is also enabling voice interfaces built into remotes and readily available on smart devices to improve content discovery.

"We have learned that an increasing number of people prefer to use voice because it's faster than using a remote to input into a search function," says Rivet.

Voice interfaces are also helping Condé Nast attract and retain its audience; seeing an option to hear rather than read an article can help convince a consumer to engage with content they would otherwise skip. "We're taking long stories and using AI to generate audio-narrated stories," says Bhakta. "We have seen a huge uptick in the number of people who actually prefer to listen to stories rather than read them." The ability to now produce an audio version in minutes via AI enables the publisher to release text and audio versions together—and even have the audio in a famous voice, such as *Vogue* editor-in-chief Anna Wintour's.

Forging Deeper Connections

As AI continues to become both more powerful and more accessible, media companies will increasingly leverage the speed of AI processing to collect and respond to real- and near-real-time data about an individual's behaviors, preferences, and moods.

These are early days in using AI to read emotions, but progress is underway. Researchers at the University of Auckland in New Zealand developed an AI model that achieved 84% accuracy in detecting emotions such as joy, anger, sadness, and disgust in tweets at a more nuanced level than traditional sentiment analysis algorithms were capable of producing.[2] The researchers were able to connect those emotions to different resulting behaviors.

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Such insights promise to help a media platform serve up timely content recommendations or playlists to fit an individual consumer's current mood and to evaluate reactions to content, including ads, that they consume. For example, McDonald's Portugal has used real-time facial emotional analysis to personalize content and marketing promotions.[3] Music streaming service Spotify enables premium customers to enter prompts into its chat feature, such as "an indie folk playlist to give my brain a big, warm hug," to generate personalized playlists using its AI-enabled personalization technology.

Condé Nast plans to use scroll depth and speed of scrolling to predict customer drop-off and dynamically inject a widget directing users to other engaging site content, with an eye to additional ways to use AI in that process. Naturally, media companies will need to tread carefully in such use cases to avoid being too intrusive, Bhakta notes.

AI is also increasingly being used to attract and then deepen engagement through tools such as gamification to incentivize and reward watch and read behaviors, VIP content hubs to offer motivated fans exclusive previews and early access, and nostalgia reminders to offer fresh content related to an individual's favorite artists, among other techniques. Spotify's popular personalized annual summaries of users' listening habits provided to them on the app, known as Wrapped, incentivize users to engage more thoughtfully with the platform to ensure next year's Wrapped summary is one they'll be proud to share.

"If you use a fun element such as gamification or quizzes and so on, that can make it even easier to convince these consumers that they should continue experiencing these services," says Simon-Kucher's Jaeger.

Overcoming Challenges to Discovery

Expanding the use of AI in discovery and retention is not without its hurdles, in everything from striking the right balance in experience versus monetization in user interfaces to investing in and using AI-supportive technology and services.

It can be challenging to access enough well-rounded, pertinent data sets to provide relevant insights when seeking to fine-tune an ultrapersonalized user experience—especially in real time. Amazon leverages its built-in advantage of access to personalized shopping data, but other companies are overcoming this obstacle through partnerships and bundling, such as the successful alliance of Max, Disney+, and Hulu, or aggregation, such as Apple TV+ being available through Amazon.

"When you have access to content under one or just a few platforms, [that] just makes discovery and navigation that much easier," says Rivet.

Media companies also face the risk of over personalization. It's important to avoid leaving users with the feeling they're missing out on content they would find interesting, says Jaeger, and to gauge a user's openness to content outside their recent interests. One key solution is identifying incentives to encourage users to consume content under their own profiles so data can be aggregated and processed accordingly. She also suggests asking users direct questions to better personalize discovery, which can help offset the negative impact on data accuracy that occurs when an individual user consumes content under another user's profile.

Any use of AI requires good governance, including robust security, ethical data practices, responsible use policies, protections for intellectual property, and use-case transparency. It's important that AI use policies protect user privacy and data in compliance with all applicable regulations and that AI use cases are respectful to individuals and communities and avoid introducing biases into processes. Responsible AI, a set of guiding principles enabling organizations to mitigate risk and reduce unintentional consequences that may occur with the adoption of AI, can be useful in this process. Adopting policies supporting explainability and transparency in how AI is being used promotes understanding and trust.

Some AI policies can even be turned into a feature. Spotify, for example, has experimented with using large language models (LLMs) to generate concise explanations about why its AI model is recommending particular music, podcasts, and audiobooks, such as "Check out band member X's new solo single."[4] The company says users are up to four times more likely to click on recommendations accompanied by explanations.

Of course, the technology services and infrastructure to support all these emerging AI use cases require careful investment. Condé Nast, for example, has built its own data science team to construct recommendation models, personalized chat, dynamic paywalls, and other analytics tools, and it has engaged with an LLM provider to further develop capabilities across its platforms.

But media companies must take care not to become so enamored of the technical capabilities enabled by AI that they lose sight of the goal, Jaeger warns. "One thing that we have seen in so many cases is that people think about innovations from a technical perspective and not from the perspective of what users really want and what they want to pay for. That should be the core question for every innovation that you launch," she says. And unless an AI-enabled feature is still critical for retention, "if you can't monetize it, then you shouldn't do it."

Advances in AI now allow more robust, resource-consuming computations and the ability to quickly leverage increasingly rich, diverse, and more readily available data sets.

Conclusion

With a torrent of options for news and entertainment and elevated expectations for personalized media experiences, consumers have become increasingly frustrated by the pursuit of content they truly want to spend time with.

But in addition to competing with other media for attention, video and music streamers, broadcasters, publishers, and other media companies must also contend with high costs, low margins, and the financial impact of losing customer engagement among those undertaking the ever-longer process of finding content they're excited to watch, read, or hear.

Media companies are increasingly turning to AI to overcome their challenges in discovery and retention. Advances in AI now allow more robust, resource-consuming computations and the ability to quickly leverage increasingly rich, diverse, and more readily available data sets. That capability is powering new ways to conduct deeper and more detailed analysis of both individual users and media content to find new connections that can be used to streamline and speed the discovery experience.

"The data that's available to any particular household or any particular person is only becoming more enriched over time, and that's really improving the way that the LLMs are using that technology to make personalization and recommendations," says Rivet. "More data allows us to understand the similarities and differences among different cohorts of people and even among people. And when that happens, that allows models like the ones that are powering AI to make really strong and informed inferences and therefore better experiences for consumers."

Endnotes

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