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This Week's Stories

Why Facebook's New YouTube Rival Faces Very Different Challenges

August 11, 2017

Facebook is making a big effort to boost its video presence with the launch of Watch, a new subsection of the social media giant's feature lineup meant to serve as a destination for original episodic shows. Facebook is introducing Watch to a limited number of people in the U.S., and the company hasn't specified when it will roll out more broadly.

Watch is essentially a personalized hub for video content that Facebook will curate and recommend based on the massive interactions that happen daily on the platform. For example, Watch will include a "What's Making People Laugh" category that offers up shows in which many viewers have picked Facebook's "Haha" reaction. "Most Talked About" highlights video content that's generated a lot of conversation on Facebook, while the self-explanatory "What Friends Are Watching" serves up shows that are popular with your friends.

Facebook is framing Watch not only as a video service for the company's 1.32 billion daily users, but also as a means to foster and attract talent. The company describes Watch as "a platform for all creators and publishers to find an audience, build a community of passionate fans, and earn money for their work."

That may sound an awful lot like YouTube, which has been responsible for cultivating a new wave of celebrities who have found fame by serving up content attractive to massive audiences on the Alphabet-owned platform.

But there are fundamental differences between the way people find, discover and watch videos on Facebook compared to YouTube. Think about the videos you come across on Facebook most often: they may include heartwarming clips from The Dodo showing adorable animals being rescued, simple but ingenious dinner recipes from Tasty, or video memes published by UNILAD.

More importantly, consider where and how you usually discover such videos on Facebook. While Facebook already has a dedicated tab for video, chances are you regularly stumble upon the site's videos in your News Feed crawl because a friend shared it, posted it to your Timeline, or otherwise interacted with it in some way.

Contrast with how you use YouTube. You may frequent YouTube because you avidly follow a particular person or channel, like PewDiePie or Lilly Singh. Perhaps you're fixing a broken zipper and need a bit of help from a video tutorial. YouTube has long established itself as the go-to platform and search engine for just about any type of video you can think of.

That's not to say Facebook's prospects for Watch are slim. There's clearly demand for more video content, which some publishers are flocking to satisfy. And Facebook's massive social media presence gives it the sort of taste-tracking leg up other companies dream of.

For example, Facebook may be better at personalizing video recommendations since it already knows a lot about you based on the posts you react to and the pages you follow. When you open the News

Feed, you're already getting an individualized view of what's happening in the world that's specific to you, one that's centered around your interests and the people that matter to you most.

It's easy to imagine Facebook taking a similar approach when it comes to curating video. YouTube, meanwhile, relies more heavily on viewing history for recommendations, which means it can take longer for new users to see meaningful suggestions.

Facebook may one day have the edge in luring talent, too, despite YouTube's reputation for creating multimillionaire celebrities. Facebook's social canvas offers a much bigger opportunity to reach viewers who might otherwise not be looking for video content when they bring up Facebook on their phones. YouTube, by comparison, is a video site designed for people actively seeking video content in specialized categories like video game commentary, beauty tutorials or apartment remodeling.

Industry observers have interpreted Facebook's Watch as a move to challenge YouTube. That's probably true on balance, but it's important to consider how different both companies' approaches have been up to this point. Facebook's challenges are manifold, and extend beyond merely beating YouTube at its own game. Will Facebook users embrace a mindset that bids them go looking for video experiences instead of waiting to absorb whatever surfaces in their News Feeds?

Time will tell, though it probably hinges on the company's ability not just to lure viewers away from video-focused rivals, but to fold its new stable of video content into the popular, signature platform features it already has, and that its rivals lack.

msn.com

Verizon Tries To Maintain Stake In Public Safety As FirstNet Opt-Ins Stack Up

August 9, 2017

AT&T may have been awarded the FirstNet build contract, but rival U.S. wireless carrier Verizon said it plans to continue offering public safety solutions to states regardless of their opt-in status.

In a recent ex parte filing with the FCC, Verizon reiterated "the company's intention to provide reliable and innovative public safety communications services to state and local governments irrespective of whether states choose to opt out of the FirstNet network."

The assertion marks the continuation of Verizon's attempts not to be left out of the public safety market as a steady stream of state opt-ins to AT&T's FirstNet build come rolling in.

Verizon in July asked the FCC to confirm states have the "same flexibility as FirstNet to select partners for deploying and operating" their public safety networks. That same month, Mike Maiorana, senior vice president of Verizon's Public Sector business, issued a statement noting the carrier's "decades-long commitment to the public safety market is as strong as ever."

"We understand the needs of public safety, and we continue to support these important customers by building upon the years of trust we've established with our nation's first responders," Maiorana said. "We have a clear roadmap to the future with nationwide fiber investments, smart cities solution deployments, and our commitment to 5G technology -- all of which will benefit public safety and our communities. And we intend to offer services and solutions that will complement and enhance the overall desired outcome of FirstNet."

But Verizon – like fellow FirstNet alternative Rivada – faces an uphill battle.

"In particular, Verizon noted its use of satellite communications technology in remote areas of California, Cell-on-Wheels deployments in Utah, and network repeaters in Arizona."

On Monday, Montana became the 12th state/territory to opt in to AT&T's build plan. That announcement followed similar decisions from the U.S. Virgin Islands, New Mexico, Michigan, and Maine at the start of August. West Virginia, New Jersey, Iowa, Arkansas, Kentucky, Virginia, and Wyoming have all also accepted AT&T's FirstNet state plans.

Montana's opt-in, though, gives an example of where Verizon might be able to offer those complementary services to FirstNet – assuming they're not already in the state plan.

In his acceptance statement, Montana Governor Steve Bullock cited how the improved network would benefit first responders like those currently battling wildfires in the state.

"This partnership will allow us to provide our first responders increased capabilities to communicate effectively with the public as quickly as possible," Bullock observed. "As wildfires across the state impact our communities and our hometowns, it's critical that we support the efforts of the men and women protecting Montana with all resources available."

Fire response just happens to be one of the critical communications areas Verizon has highlighted lately.

Last month, Verizon pointed out it was lending communications support to more than 8,000 firefighters and first responders battling fires in several western U.S. states. In particular, Verizon noted its use of satellite communications technology in remote areas of California, Cell-on-Wheels deployments in Utah, and network repeaters in Arizona.

But AT&T's FirstNet SVP Chris Sambar told Wireless Week the carrier believes its solutions offer the best value, and remains hopeful states will continue to come on board.

"We launched state plans three months early as we knew some states were ready to move quickly," Sambar commented. "We're honored that more than 20 percent of the states and territories have already taken advantage of this opportunity, choosing the FirstNet and AT&T plan to build out the nationwide public safety broadband network in their state."

Sambar said state feedback on the initial state plans was due on August 4. AT&T is currently reviewing and addressing those comments, and will begin its official 90-day clock in mid-September. From there, Governors will have until mid-December to make an opt-in/opt-out decision if they haven't already done so.

wirelessweek.com

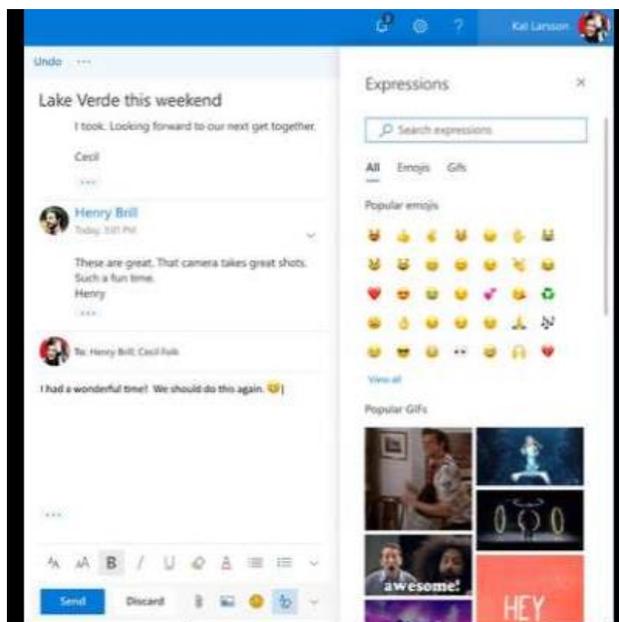
Products & Services

Microsoft's New Outlook.com Design Includes Better Search And More GIFs

August 9, 2017

Microsoft is starting to roll out a new Outlook.com beta today. It's an opt-in web-only beta that is activated through a "try the beta" toggle on Outlook.com, and it should be available to all users within the next few weeks. This is the third design iteration of Outlook.com since it first launched in 2012. Microsoft is updating the Outlook.com design with some subtle changes, including an improved conversation view, and the ability to read and attach files a lot faster.

The new search interface is located at the top of the inbox now, rather than to the side, and it will surface emails and people in its results. Outlook.com's new interface will also preview files and photos in your conversation list, making it quicker to glance at a particular email with attachments. Microsoft is also making it easier to find people within your inbox, by tagging people as favorites.



In keeping with modern times, Outlook.com beta also includes popular GIFs and emoji's that can be inserted into emails along with a search interface to find more. Microsoft is also testing out some new smarter inbox features, including the ability to tag restaurants, flight information, or favorite teams' schedules into emails. If you're discussing coffee places with a friend, you can quickly add rich details and location information into a conversation.

Microsoft is planning to add new features over the next few months, including updates to the calendar and people sections of Outlook.com. You can opt-in through the toggle, and it's also a switch that lets you revert back to the existing Outlook.com interface if there's some new features you don't like. Microsoft is looking for feedback on all the features. "Based on your feedback we'll iterate, improve, refine, or discard them," says the Outlook team. "At the end of the beta, we'll bring the best innovations into Outlook.com."

[msn.com](https://www.msn.com)

Report: Apple Working On LTE-Enabled Smartwatch

August 7, 2017

It looks like Apple's smartwatch could soon break free of its dependence on the iPhone.

According to a Bloomberg report, Apple is developing a version of its Apple Watch that will come with LTE-capable chips from Intel built in. The move means the smartwatch, which has previously required a connection to a nearby iPhone, will be able to independently connect to the network and allow users to complete tasks like using apps and downloading new songs, Bloomberg indicated.

Though Qualcomm has historically been the primary supplier for iPhone chips, Apple added Intel as a supplier last year. The reported decision to use Intel to supply the Watch modems comes amid a fierce spat between Qualcomm and Apple over the former's patent licensing practices. The latest on that can be found here.

"The move means the smartwatch, which has previously required a connection to a nearby iPhone, will be able to independently connect to the network and allow users to complete tasks like using apps and downloading new songs..."

Bloomberg notes Apple is already discussing the LTE Watch debut with wireless carriers in the United States and Europe. All four of the major stateside carriers are planning to carry the device, according to the report.

The next piece in the puzzle will be cost.

T-Mobile currently allows T-Mobile One customers to add a wearable line for \$10 per month, though speeds for wearables are limited to 512 kbps. For the LTE-enabled Samsung Gear S3, Verizon and AT&T currently requires customers to activate a new line on one of their cellular data plans.

It seems fair to assume the carriers would treat an LTE-capable Apple Watch similarly to the Gear S3, but aggressive promotions wouldn't be out of the question – especially if the device comes out alongside the iPhone ahead of the fourth quarter holiday season.

wirelessweek.com

Emerging Technology

How iPhone 8 Could Change The Wireless Charging Landscape

August 9, 2017

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"Apple is joining the Wireless Power Consortium to be able to participate and contribute ideas to the open, collaborative development of future wireless charging standards."

As we approach the expected September iPhone event, the gadget world is abuzz with questions: Will there be two new iPhones or three? How much will the presumed high-end OLED model cost? Will facial recognition fully replace Touch ID, or merely be an alternative? And: will the iPhone finally get wireless charging?

But that last one is a loaded question because "wireless" charging is in the eye of the beholder.

Sure, you can place a Samsung Galaxy and many other Android phones onto a charging pad without having to plug the phone into any charging cable. And those same pads are increasingly built into countertops at coffee shops, burger joints and even furniture you can buy at Ikea. But those pads still need to be plugged into a wall outlet. The wire is still there, it's just not attached directly to the phone.

That's a roundabout way of saying "wireless charging" is basically a misnomer. Except when it isn't: "True" wireless charging -- in which batteries get juiced up at distances measured in meters, not centimeters -- is a real-world technology, too.

Wireless charging over a distance could be the real tech game changer, allowing us to juice up our phones as soon as we walk into a room. The technology is also a boon to the ever-increasing number of smart devices in our lives, from portable speakers to hearing aids. It just needs to get over the pesky questions over whether it's safe -- and actually show up in a mass-market consumer device.

So, before we posit the question as to whether the next iPhones will include wireless charging, let's start by untangling the different technologies that Apple might incorporate.

Inductive Charging: Qi Vs. Powermat

Widely used for years in cordless electric toothbrushes, inductive charging is the most common technology employed in most of today's "wireless" charging devices and accessories. There are two major standards in the space: Qi -- named for a Chinese word that means energy and is pronounced "chee" -- and Powermat.

Both standards are also working to incorporate magnetic resonance technology, which could charge over distances of up to 4 centimeters. That would, for instance, mean that aligning your phone to the charging pad "sweet spot" would be less of a hit-and-miss affair, or that the charging pads could be hidden behind thin layers of wood or plastic.

Qi has been incorporated into phones from a variety of manufacturers, and McDonald's has built Qi-compatible chargers into the furniture at its restaurants. Powermat-infused tables, meanwhile, can be found in some Starbucks and airport lounges.

The rivals are backed by two opposing standards organizations, too: The Wireless Power Consortium for Qi, and the AirFuel Alliance for Powermat. The latter was formed when Powermat and its Power Matters Alliance merged with a third, rival wireless standard (confusingly called the Alliance for Wireless Power, or A4WP) in 2014.

The good news is that the rivalry has been less of a zero-sum game in recent years. Samsung, for one, has made its recent high-end Galaxy phones (including the S7 and S8) compatible with both inductive charging standards, so you can juice it up on a Qi-powered counter at McDonald's and a Powermat-powered one at Starbucks.

'True' Wireless Charging: Energos And Powercast

Forget about 4 centimeters. How about charging from a distance of 4 meters? Or anywhere in an average-size room?

It's a pretty recent concept, but companies like Energos and Powercast are producing technology that can more accurately be called wire-free. Both use radio frequency (RF) energy, a charging method that works similarly to Wi-Fi, that enables devices to charge when within the range of a power transmitter.

Energos is the developer of WattUp, the wire-free technology that the company claims is capable of charging anything from a mobile device to various wearables like a hearing aid when located up to 15 feet (about 4.5 meters) from the transmitter. The first wire-free transmitter is expected to hit the market before the end of the year, according to CEO Stephen R. Rizzone.

"Besides mobility, the idea of charging at a distance is very, very important to IoT devices," said Rizzone. "Now what's happened, is that you no longer have to run a cable to them, nor do you have to have a large battery, that either has to be replaced or somehow recharged. You can have a much smaller battery because you're continually getting power from these transmitters."

But there's a common concern: is it safe? The Federal Communications Commission enforces the standards of the Food and Drug Administration that determine how much power is safe enough to be absorbed by human tissue -- and Rizzone says Energos is "very, very close" to getting its first FCC approval.

Powercast, the other true wire-free company, has made some greater strides. The company's Powercaster transmitters are already approved by the FCC, and they've been available since 2010 -- but only in industrial, commercial and military markets.

PowerSpot, Powercast's new standalone transmitter created for consumer electronics, is still not available to consumers and isn't yet FCC approved. The company hopes to also bring it to the market before the end of the year.

"The goal is for consumers to simply place or hang all enabled items for recharging within range of a PowerSpot in their home or other public places," said Charlie Greene, chief operating & technical officer of Powercast.

Which Way Will Apple Go?

All of this brings us back to the iPhone issue. Will Apple finally jump on board the wireless power bandwagon? If so, which horse will it back: Qi, Powermat -- or door no. 3? (You can buy third-party cases for the iPhone that enable wireless charging, but the feature has yet to be built in.)

To date, Apple has two products that use inductive charging: the Apple Watch and the AirPods wireless headphones. Both of them, however, come with their own chargers, and neither appears to work with any third-party wireless chargers -- Qi, Powermat or otherwise.

And while Apple has a penchant for proprietary standards -- iPhones use Lightning cables rather than the emerging USB-C standard, for instance -- the news in February that Apple had joined the Qi-backed Wireless Power Consortium has some declaring that group the winner. However, Apple's statement at the time was more equivocal: "Apple is joining the Wireless Power Consortium to be able to participate and contribute ideas to the open, collaborative development of future wireless charging standards." (Neither Apple nor Qi responded to our requests for comment earlier this week.

If Apple were to go with Qi, Powermat has implied it would do whatever it takes to be compatible. Powermat "will continue to innovate and develop new products and technology supporting all devices coming into the market" the company said in a statement.

"We recognize Apple's ability to bring wireless charging into mainstream by the sheer volume of iPhones in the market." Put another way: Powermat wants to ensure that partners like Starbucks can service the tens of millions -- and eventually hundreds of millions -- of iPhone owners, just as they do for Android fans.

Could Apple wow the world with true long-distance wireless charging? Energous CEO Rizzone has long touted a "top five" consumer electronics partner, and the company received a \$10 million investment from Apple component supplier Dialog Semiconductor.

Leapfrogging straight from no wireless charging to true wireless charging would be an impressive feat, but a material product from a possible Apple/Energous partnership could also still be years away -- if it ever materializes at all.

The good news is that the wait for Apple's wireless charging plans will be short. If the company sticks to its normal schedule, the new iPhones should be announced in the first two weeks of September.

(Whatever wireless charging feature is announced, though, may be delayed a few more weeks, according to a rumor from July.)

The bad news? It may be more convenient, but wireless charging is far less efficient than a good old wired charger. A CNET test found that the Galaxy S8 took 3.5 hours to charge inductively, more than the typical 2 hours it takes with a standard USB-C cable.

But fans of quick wired charging won't have to worry. Unlike the headphone jack, we expect the iPhone's Lightning port won't be going away anytime soon.

msn.com

Walmart Wants To Monitor Shoppers' Facial Expressions

August 8, 2017

In the future, Walmart shoppers may not have to ask for help. Just a simple scowl could summon a helpful worker ready to assist.

A recent patent filing suggests new ways the nation's top retailer wants to get even closer to its customers: a video system that keeps tabs on customers' facial expressions as they move through the store and the movements at checkout lines.

While Walmart isn't explicit about what it has in mind, and a spokesperson could not be reached for immediate comment, the system apparently envisions using video to scan for customers who are frustrated or unhappy so help can be dispatched. A shopper, for instance, might not be able to find a product or can't figure out pricing.

Conversely, store managers could use the system to determine when they have a hit on their hands -- a display or product that delights shoppers.

In any case, the system, as first reported by the Wall Street Journal, could give Walmart an edge in its battle with Amazon, the online retailer that is eating into profits.

According to the patent, Walmart says it's easier to retain existing customers than acquire new ones through advertising.

"Often, if customer service is inadequate, this fact will not appear in data available to management until many customers have been lost. With so much competition, a customer will often simply go elsewhere rather than take the time to make a complaint."

The technology would "allow Walmart to respond more efficiently to customer service issues, even before a customer actually complains," writes Taylor Knight on the Total Retail blog.

"This is an in-store advantage for Wal-Mart, as it could prevent shoppers from taking to social media to complain about a bad experience with the retailer," Taylor wrote. "Furthermore, getting the extra help a shopper needs without having to ask for it is a personal touch that e-commerce can't offer."

No word on if or when the tech might be tested or deployed.

usatoday.com

Mergers and Acquisitions

Lyft Acquires Two Growth-Focused Startups To Drive More Sign-Ups

August 10, 2017

Ride hailing company Lyft has acquired two companies focused on growth, including customer acquisition, retention, referral programs and more. The companies being acquired are YesGraph, whose team and talent will join Lyft, and DataScore, whose growth team is coming over to the ride share provider.

The acquisitions are designed to help Lyft capitalize on its existing rapid pace of growth, which the company says has been "rapid" over the past year. Third-party data backs that up, suggesting that Lyft is seeing uncharacteristically high gains thanks in part to the difficulties faced by rival Uber. Lyft

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"The companies being acquired are YesGraph, whose team and talent will join Lyft, and DataScore, whose growth team is coming over to the ride share provider."

has also expanded to over 160 new cities during the past year alone, and already has seen more rides in 2017 than it provided during the entirety of 2016.

These new companies joining Lyft look designed to help press the gas pedal further on that pace of expansion, with a focus specifically on attracting more riders and drivers to the platform. YesGraph's expertise is in building referral programs that reward customers for bringing in new ones, and Lyft says they'll be focused on improving and building out the Lyft Driver Referral Program as part of the company.

DataScore's team will be focused on scaling both driver and passenger sides of the equation, using their expertise in "customer acquisition, conversion and retention programs," according to Lyft. DataScore's tagline prior to the acquisition is "We help startups grow," and they advertise "a data-driven marketing approach," "powered by proprietary technology" to help make that happen.

This seems an acknowledgement on Lyft's part that now is the time to aggressively pursue growth in order to capitalize on its position relative to industry leader Uber. Lyft has been doing a lot in terms of product and market work to help with that, but acquisitions focused on bringing in new users is also a smart use of its position, and its new funds, which include a \$600 million round confirmed in April. The company did not disclose financial terms of either of these new acquisitions.

techcrunch.com

Amazon Invests In Andy Rubin's Essential Phone Project

August 9, 2017

A \$300 million round included the Alexa Fund and China's Tencent.

Amazon is dipping more digits into the hardware market. Along with Chinese powerhouse Tencent, the shopping juggernaut has announced an investment into Andy Rubin's Essential Products Inc. via the Alexa Fund, the Wall Street Journal reports.

Other details are scant, like how much either of those contributed to the \$300 million funding. But we do know that while the PH-1 handset is exclusive to Sprint here in the US, you'll be able to buy one at Amazon or Best Buy at launch.

Now all we need is a release date. That might be coming in a few weeks according to Essential president Niccolo De Masi. Nothing like waiting until you have to fight for attention amongst a new iPhone or Galaxy Note, is there?

Update: Access Technology Ventures announced it invested \$100 million in Essential Products, as part of a \$300 million round of funding that included Amazon's Alexa Fund, Tencent and other venture capitalists.

Essential CEO Andy Rubin says that next week you'll be able to find out more about where to get one of the phones, which are "in full production."

engadget.com

Netflix Acquires Comic Book Publisher Millarworld

August 8, 2017

Netflix announced Monday it has acquired the comic book publisher founded by acclaimed creator Mark Millar, as it continues to beef up its original movie and TV options.

Millarworld, run by Millar and his wife, Lucy, features properties including Kingsman and Kick-Ass, both of which have been turned into blockbuster films. A sequel to the original Kingsman movie is slated to launch later this year.

The deal will allow Millar to create movies, TV shows and other content based on franchises under the Millarworld label.

Millar previously worked at Marvel, where he rebooted The Avengers, and also created characters such as Old Man Logan, an older version of the classic X-Men hero Wolverine.

"Mark is as close as you can get to a modern day Stan Lee," said Netflix chief content officer Ted Sarandos. "We can't wait to harness the creative power of Millarworld to Netflix and start a new era in global storytelling."

This is the first time Netflix has made an acquisition of a company, part of its efforts to add more original content to the service as it competes with rivals including Amazon and Hulu.

The streaming giant already works with Marvel, airing a series of superhero shows on the service including Daredevil and Jessica Jones. The latest series in that collaboration, The Defenders, is available Friday.

msn.com

Industry Reports

Report: Amazon Looking To Sell Sports, Music Tickets And Encroach On Ticketmaster

August 10, 2017

Amazon is reportedly in talks with sports and concert venues to sell tickets, a move that could challenge Ticketmaster's dominance in the business.

Amazon, which two years ago began selling tickets in the U.K., has approached U.S. venue owners about partnering to sell tickets here, too, Reuters reported Thursday, citing four sources knowledgeable about the development.

The strategy amounts to a shot across the bow of event heavyweight Live Nation, which owns Ticketmaster and owns or is aligned with 196 U.S. venues, including The Fillmore in San Francisco, the Hollywood Palladium and House of Blues venues.

Amazon hopes to take advantage of consumer displeasure in the current state of ticket fees and sports leagues and venue operators' desire for additional competition, Reuters reported.

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"Amazon hopes to take advantage of consumer displeasure in the current state of ticket fees and sports leagues and venue operators' desire for additional competition."

Ticket sales represent a prime business in the U.S. Sports ticket revenues alone were \$18.7 billion in 2016, projected to increase to \$20.8 billion in 2020, according to PricewaterhouseCoopers, Live music ticket sales hit an estimated \$7.4 billion in 2016 and is set to reach \$9.1 billion in 2020, PwC estimates.

Live Nation earlier this week reported \$2.8 billion in revenue for its second-quarter, which ended June 30. That up 27% over the \$2.2 billion in the same period last year.

Amazon has several jobs listed online for its Amazon Tickets, including a project manager for "Earth's most customer-centric ticketing company, a place where event-goers can come to find and discover any ticket they might want to buy online."

Selling tickets could drive Amazon Prime memberships and bundled merchandise sales, according to the report.

Amazon and Live Nation declined to comment on the report.

usatoday.com

The Amazing Ways Google Uses Deep Learning AI

August 10, 2017

Deep learning is the area of artificial intelligence where the real magic is happening right now. Traditionally computers, while being very fast, have not been very smart – they have no ability to learn from their mistakes and have to be given precise instructions in order to carry out any task.

Deep learning involves building artificial neural networks which attempt to mimic the way organic (living) brains sort and process information. The “deep” in deep learning signifies the use of many layers of neural networks all stacked on top of each other. This data processing configuration is known as a deep neural network, and its complexity means it is able to process data to a more thorough and refined degree than other AI technologies which have come before it.

Deep learning is already driving innovation at the cutting edge of artificial intelligence and it can be seen in many applications today. However, as data volumes continue to increase and processing technology becomes more affordable, many more sectors of society are likely to be impacted. Here's a look at how one of the pioneers – Google – is already using it across many of its products and services.

Why Is Google Interested In Deep Learning?

Google has been a powerful force in championing the use of deep learning – a technology now so prevalent in cutting edge applications that its name is pretty much synonymous with artificial intelligence. There's a simple reason for this – it works. Putting deep learning to work has enabled data scientists to crack a number of difficult cases which had proved challenging for decades, such as speech and image recognition, and natural language generation.

Its first publicly-discussed explorations of the possibilities of deep learning began with the Google Brain project in 2011. The following year, Google announced that it had built a neural network, designed to simulate human cognitive processes, running on 16,000 computers and which was capable, after studying around 10 million images, of identifying cats.

In 2014, Google acquired UK based deep learning startup Deep Mind.

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“Google’s latest breakthrough involving deep learning in the field of image analytics is in image enhancement.”

Deep Mind pioneered work in connecting existing machine learning techniques to cutting edge research in neuroscience, leading to systems which more accurately resembled “real” intelligence (i.e. brains). Deep Mind was responsible for the creation of Alpha Go, which used video games, and later the boardgame Go, to demonstrate the ability of their algorithm to learn how to carry out a task and become increasingly good at it.

What Does Google Use Deep Learning For Across Its Mail Services?

While proving the concept in laboratories and games contests, it was also quietly rolled out across many of Google’s services.

Its first practical use was in image recognition, where it was put to work sorting through the millions of images uploaded to the parts of the internet which Google indexes. It does this in order to more accurately classify them, and in turn give users more accurate search results.

Google’s latest breakthrough involving deep learning in the field of image analytics is in image enhancement. This involves restoring or filling in detail missing from images, by extrapolating for data that is present, as well as using what it knows about other similar images.

Another platform, Google Cloud Video Intelligence focuses on opening up video analytics to new audiences. Video stored on Google’s servers can be segmented and analyzed for content and context, allowing automated summaries to be generated, or even security alerts if the AI thinks something suspicious is going on.

Language processing is another area of their services where the tech has been implemented. Its Google Assistant speech recognition AI uses deep neural networks to learn how to better understand spoken commands and questions. Techniques developed by Google Brain were rolled into this project. More recently, Google’s translation service was also put under the umbrella of Google Brain. The system was rewritten to run on a new platform called Google Neural Machine Translation, moving everything to a deep learning environment.

The third primary way Google uses deep learning today on its core services is to provide more useful recommendations on YouTube. Again, Google Brain is behind the technology used here, which monitors and records our viewing habits as we stream content from their servers.

Data already showed that suggesting videos that viewers will want to watch next is key to keeping them hooked to the platform, and the ad bucks rolling in. Deep neural networks were put to work studying and learning everything they could about viewers’ habits and preferences, and working out what would keep them glued to their screens.

What Else Does Google Use Deep Learning For?

Of course, given the success they have had with it, it is inevitable that Google would be keen to implement this technology in its more ambitious, specialist or future-oriented projects.

In 2015, it open sourced its TensorFlow machine learning and deep learning-focused programming platform, to allow anyone to develop neural network-based solutions using the same technology they use themselves.

Through its Cloud Machine Learning Engine, it also offers storage and processing power to third parties which want to put the technology to use without investing upfront in hugely powerful computer infrastructure.

Google's self-driving car division, Waymo, has incorporated deep learning algorithms into their autonomous systems, in order to make self-driving cars more efficient at analyzing and reacting to what is going on around them.

And Deep Mind is currently working on healthcare-focused projects involving detecting early signs of eye damage, and cancerous tissue growth.

What's Next?

Google has been an effective force in pioneering, championing and bringing deep learning to the masses. Thanks to their research and investment anyone can benefit from these technologies. And increasingly, we will be able to put them to work ourselves on our own data. A great deal of people are pinning their hopes on deep learning providing some great leaps forward in coming years, in every field from medicine to exploring space – and the groundwork done by Google will play a big part in that.

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