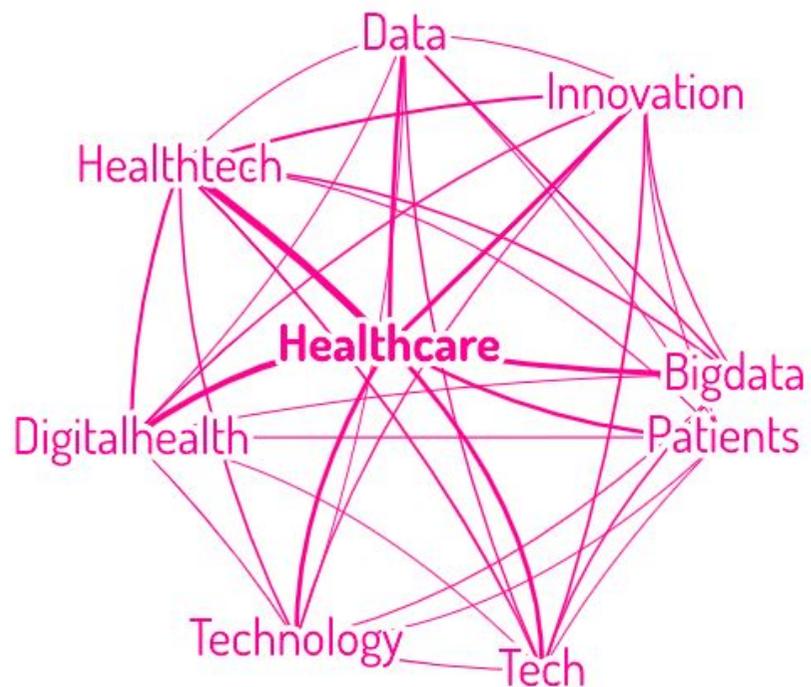# Digital Health Trends for

CES 2020

Summary

1. Introduction and Overview

1. Big Data and Analytics

1. Artificial Intelligence / Machine Learning

1. IoMT (Internet of Medical Things)

1. Telemedicine

1. VR and AR in Healthcare

1. The Future of Digital Healthcare

Introduction

Introduction

Technological innovations are accelerating disruption in consumer wellness and healthcare. Today's biggest trends in the healthcare industry are dominated by the concept of preventive and personalized care, with an increasing number of sector stakeholders aiming to deliver this through smart technology (such as AI, machine learning, VR, AR, and advanced data processing) and client-centered solutions.

Trend correlation in mentions between healthcare, technology, and data.

The global digital health market was valued at **US$ 144.2 billion in 2018**[1], and is predicted to grow to **US$ 206 billion by the end of 2020**[2]. Currently, the mobile and wireless health market in the Asia Pacific (APAC) region is set to contribute the most significant portion of the rise overall, while the mobile health segment is predicted to produce the second-largest revenue share. (approximately US$ 46 billion in 2020).

Looking at these numbers, it becomes clear that although there are still concerns around data systems integrity and security of personal information, many industry experts and patients are choosing to see the glass as half-full; instead focusing on the benefits that digital health can deliver such as efficient healthcare expenditures, and greater accessibility to qualified medical help for everyone.
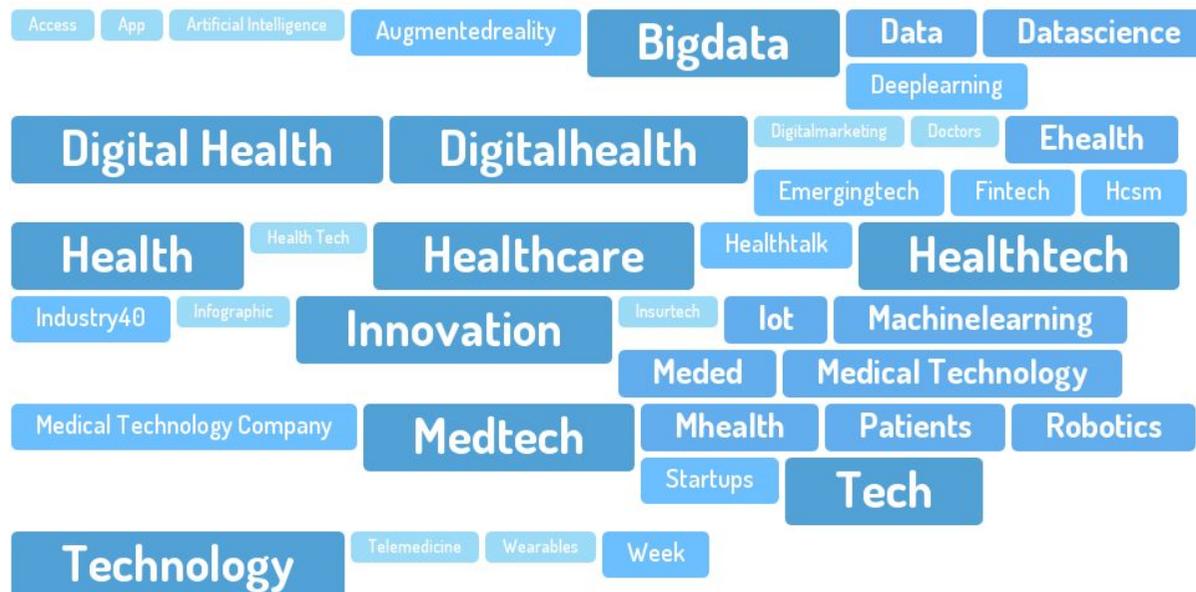
References: 1. Digital Health Market: Global Industry Trends, Share, Size, Growth, Opportunity and Forecast 2019-2024
2. Global Digital Health Market By Major Segment 2015-2020

Which Digital Health Trends Were Most Prominent In 2019?

Collaborations and partnerships between technology and healthcare companies have delivered significant improvements in basic tasks such as better appointment scheduling and coordination, immediate test results, improved procedures, and comprehensive treatment plans – allowing for **improved patient experience and enhanced clinical outcomes at lower costs**.

KEY CONCEPTS
about **Health/Digital Technology** between **Oct 1, 2019 6:00 AM** and **Dec 9, 2019 6:59 AM**

Access | App | Artificial Intelligence | Augmentedreality | **Bigdata** | Data | Datascience | Deeplearning | **Digital Health** | **Digitalhealth** | Digitalmarketing | Doctors | **Ehealth** | Emergingtech | Fintech | Hcsm | **Health** | Health Tech | **Healthcare** | Healthtalk | **Healthtech** | Industry40 | Infographic | **Innovation** | Insurtech | **Iot** | **Machinelearning** | Meded | **Medical Technology** | Medical Technology Company | **Medtech** | Mhealth | Patients | Robotics | Startups | **Tech** | **Technology** | Telemedicine | Wearables | Week

Key topics discussed on social around Digital Health

Methodology

Digimind monitored mentions around digital healthcare to reveal trends and insights publicly mentioned on Facebook, Twitter, Instagram, News, Blogs, and Forums worldwide in English between 1 October - 8 December 2019.
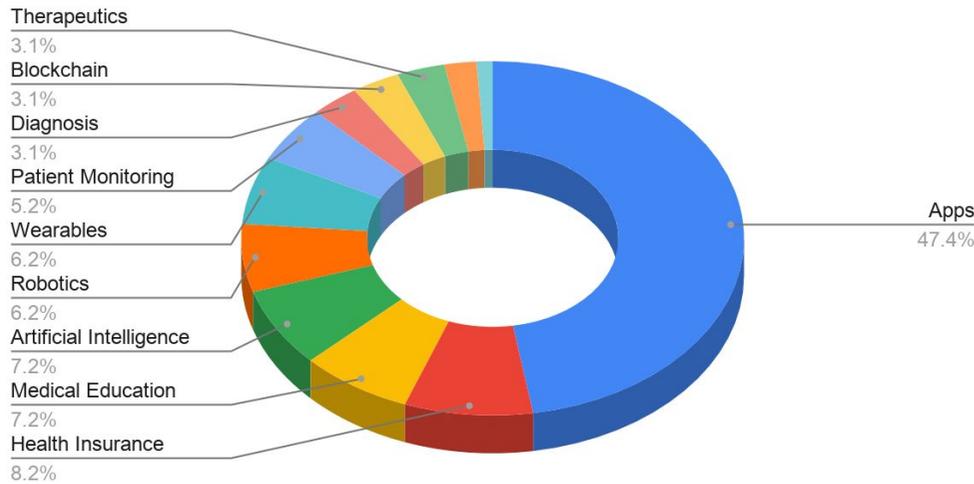
Introduction

A breakdown of the top health tech categories that are garnering the most mentions online show that **apps – which include medication, nutrition, and lifestyle apps – dominate the majority of discussions,** with the rest of the categories being extremely fragmented. This notes that the majority of **consumers are primarily concerned with healthcare trends that directly affect them** and that can impact their health on a daily basis.
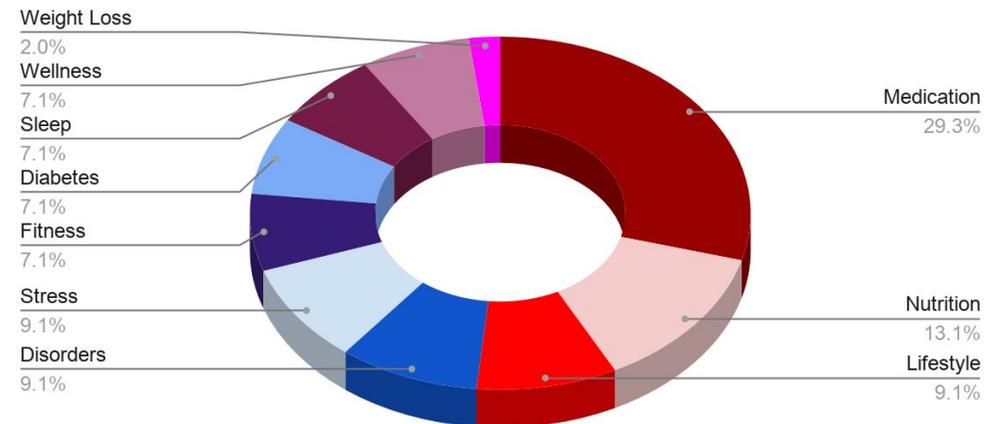
Overall, the **intricacies and developments of the latest digital health trends are not as fervently discussed outside industry specialists circles and news channels**, but that does not mean they should be ignored.
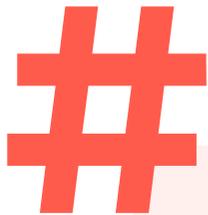
Health Tech Categories

Therapeutics 3.1%
Blockchain 3.1%
Diagnosis 3.1%
Patient Monitoring 5.2%
Wearables 6.2%
Robotics 6.2%
Artificial Intelligence 7.2%
Medical Education 7.2%
Health Insurance 8.2%
Apps 47.4%

Mentions about health categories

Lifestyle Categories

Weight Loss 2.0%
Wellness 7.1%
Sleep 7.1%
Diabetes 7.1%
Fitness 7.1%
Stress 9.1%
Disorders 9.1%
Medication 29.3%
Nutrition 13.1%
Lifestyle 9.1%

Mentions about mobile apps by app type

Top Hashtags

A look at the **top 20 hashtags** most used in relation to digital health shows that **Artificial intelligence (AI), IoT and Big Data, Machine Learning, Blockchain, VR, and robotics** are major technology topics in the digital health arena.

We've already started to witness the potential of these technologies in advancing and reforming healthcare. In the following sections, we'll deep-dive into the top trends identified and their impact on the future of healthcare.

TOP HASHTAGS

between Oct 1, 2019 6:00 AM and Dec 9, 2019 6:59 AM

Rank	Hashtags	Mentions
1	#ai	130 K
2	#healthcare	128 K
3	#healthtech	116 K
4	#digitalhealth	94 K
5	#health	76 K
6	#iot	44 K
7	#medtech	42 K
8	#artificialintelligence	38 K
9	#bigdata	37 K
10	#machinelearning	36 K
11	#mhealth	31 K
12	#innovation	27 K
13	#technology	25 K
14	#blockchain	22 K
15	#tech	21 K
16	#datascience	21 K
17	#ml	20 K
18	#robotics	19 K
19	#vr	18 K
20	#fintech	17 K

Big Data, Analytics & Artificial Intelligence

Big Data and Analytics

When dealing with diseases, it is usually easier to treat them in the early stages. **But how do you analyze, collect, and discover warning signs of serious illnesses on a larger, international scale? This is where big data can play a leading role.**

Big data, defined as is a large volume of information that can be gathered and analyzed to discover patterns and tendencies, is arguably the most vital digital health innovation for 2019 and in the coming years. Applied to healthcare, it allows us to **structure data, convert it into relevant insights, calculate and predict the probability of occurrence, treatment, and consequences of deviations and diseases.**

Big data grants immense life-saving potential, **making healthcare smart, helping prevent epidemics, and reduce maintenance and medication costs.**

Other benefits include:

⏱ **Faster access to treatment methods**

🪄 **Enhanced services and procedures**

🚫 **Error minimization and cost reduction**

👥 **Improved customer involvement**

Big Data and Analytics

Taking into example healthcare mobile apps; new integrated big data based solutions can collect, process, combine, save and analyze large data volumes for any specific purpose.

These are some of the most popular applications of this technology in medicine:

EHRs or Electronic Health Records contain demographics, laboratory test results, diagnoses, medications, etc. Only authorized users can access these records via secure information systems. Not only do they streamline the workflow and reduce document management, but they also notify a patient to follow his prescriptions, visit a doctor, or get a new analytical lab test.

Improve staffing and hospital administration. Big data provides solutions for running a complicated administrative process in a hitch-free manner. Healthcare providers can get structured insights from diverse data points and can optimize workers' involvement during crises, like epidemic outbreaks and natural disasters, as well as to **maintain a balance between unnecessary labor costs and poor customer service.**

Artificial Intelligence

From diagnostic accuracy and patient care to medical research and drug development, AI is revolutionizing the healthcare sector. Advancements in machine learning and voice recognition are being touted by healthcare professionals as **the way forward for delivering effective treatments and accurate diagnosis**.

Likewise, pharmaceutical and healthcare companies are recognizing the advantages of AI and are showing increased commitment to leveraging it to enhance offerings.

Once avoided on grounds of data security and complications in data migration, **cloud technology is increasingly embraced by the pharmaceutical and healthcare industry as an important channel for computing big data**.

On top of that, companies are recognizing its ability to enable teams to **increase cohesiveness and collaborate better, as well as identify and interpret data patterns faster and more accurately**, thereby facilitating data-driven decisions and automating monotonous tasks.

TREND

About ("digital health" OR "healthcare") AND "artificial intelligence" , in English , between Jan 1, 2018 and Dec 30, 2019

Trendline graph displaying mentions about artificial intelligence and healthcare over the past 2 years

It is without a doubt that artificial intelligence will be at the forefront of the latest digital health trends in 2019 and beyond.

A look at the number of mentions about artificial intelligence in healthcare over the past two years shows an increasing trend of discussions around the topic.
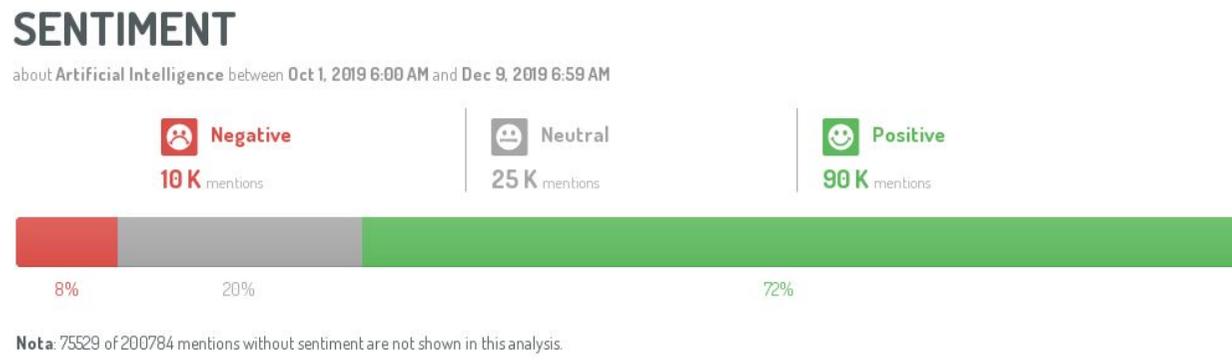
Artificial Intelligence

With the ability to be implemented across multiple categories such as smart apps, wearables, VR, and more, it can significantly increase efficiency and accuracy across the board.

Furthermore with **deep learning, computers can examine thousands of medical images** to identify patterns of disease. This offers enormous potential for improving the accuracy and speed of diagnosis. Reports of deep learning models outperforming humans in diagnostic testing has generated much excitement and debate, and more than 30 AI algorithms for healthcare have already been approved by the US Food and Drug Administration for further use in various sub-sectors[1].

One such example is **The BioMind AI system,** developed by the Artificial Intelligence Research Centre for Neurological Disorders at the Beijing Tiantan Hospital and a research team from the Capital Medical University. The system beat a team of doctors with its higher accuracy and precision in diagnosing brain tumors and predicting hematoma expansion.

SENTIMENT

about **Artificial Intelligence** between **Oct 1, 2019 6:00 AM** and **Dec 9, 2019 6:59 AM**

😠 Negative	😐 Neutral	😊 Positive
10 K mentions	**25 K** mentions	**90 K** mentions

| 8% | 20% | 72% |

Nota: 75529 of 200784 mentions without sentiment are not shown in this analysis.

Overall **the global community are optimistic about the potential of AI on healthcare**, with 72% of mentions being positive. The 8% of negative mentions involved cases such as **AI algorithms producing biased results**[2] and the ethics of having access to such information.

References: 1. China Focus: Ai Beats Human Doctors in Neuroimaging Recognition Contest
2. Akhtar, Allana. "New York Is Investigating UnitedHealth's Use ofaa Medical Algorithm That Steered Black Patients Away from Getting Higher-Quality Care." Business Insider, n.d.

IoMT (Internet of Medical Things) & Telehealth

Internet of Medical Things

Although a late adopter, the Healthcare industry is now actively embracing IoT, and has even introduced the concept of the Internet of Medical Things (IoMT). With a **market forecasted to exceed US$ 136.8 billion by 2021, this sector is being propelled by convenient patient-oriented medical devices and applications that gather, analyze, and transmit data to healthcare IT systems in real-time.**

One of the key objectives of IoMT is to keep the patient in continuous contact with their health care provider, and to allow their provider to easily access and check patient-generated data. The **Life4me+ app** is a great example of patient-doctor collaboration and the main IoMT benefits described below.

Tech products and services such as wearables and medical/vital monitors, mobile health-related apps, telehealth and residential medical devices not only assist in monitoring health status but also ensure on-time communication with care-givers and medical experts, if needed. Some categories it is being used for are:

- **Cardiac monitoring**
- **Glucose measurement**
- **Blood pressure measurement**
- **Notifications for treatments/medication**
- **Healthy lifestyle monitoring**
- **Weight control**

Internet of Medical Things

Wearables

Wearables such as AppleWatch has revolutionized the way we monitor cardiac rhythms, becoming a mobile EKG which can replace frequent doctor visits and save costs. In the coming years, **we expect to see wearables used more for healthcare** as technology continues to ensure affordability and strengthen the reliability of individual data-driven treatment.

Over the past year, an increasing number of partnerships have been formed between pharmaceuticals, technology companies, and wearables, such as **Alphabet Inc's US$ 2.1 billion acquisition of health tracking company FitBit in November 2019**, and Fitbit's alliance with Bristol-Myers Squibb Co and Pfizer Inc in October 2019 to develop proprietary technology to detect atrial fibrillation.

Geriatrics

A compelling use case for IoMT is for geriatrics. The United Nations predicts that by 2025, **1.2 billion of the 8 billion people on earth will be elderly**[1]. That's almost equivalent to the population of the 2nd largest country in the world - India.

As most seniors are faced with waning health, this puts additional stress on the healthcare system. IoMT can allow us to care for our elderly better due to its tremendous potential to help **deal with the rising costs of care, provide reminders for appointments and medication, and easy health checks.**
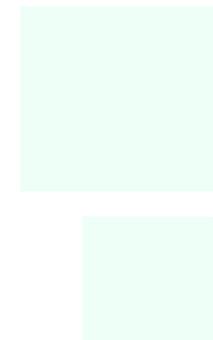
Telemedicine

Governments and healthcare companies are investing in complementary products such as digital tools and apps which can interact, monitor, and respond to patient insights. This can come in the form of self-regulating drug delivery technologies or health self-measurement apps for individuals. By doing so, companies and healthcare providers are able to **build a relationship with patients and provide a platform that further builds relationships and allow treatments outside the traditional hospital environment**.

Although telemedicine visits have increased in the US in recent years, **the majority of American adults still receive care from Healthcare Practitioners (HCPs) in person rather than via remote technology.** But increased accuracy in diagnosis, medicine dispensing, and continuous monitoring will coincide with the ability to remotely treat patients, thus bridging the accessibility gap in larger rural territories.

In parallel, **high-quality broadband expansions, improvements in audiovisual consultations, and laws allowing insurance coverage and reimbursement on telemedicine visits will be crucial for connecting people** in remote areas with specialists, and providing personalized support to sufferers of abuse, mental illnesses or terminal diseases, who may be unable to attend physical sessions.
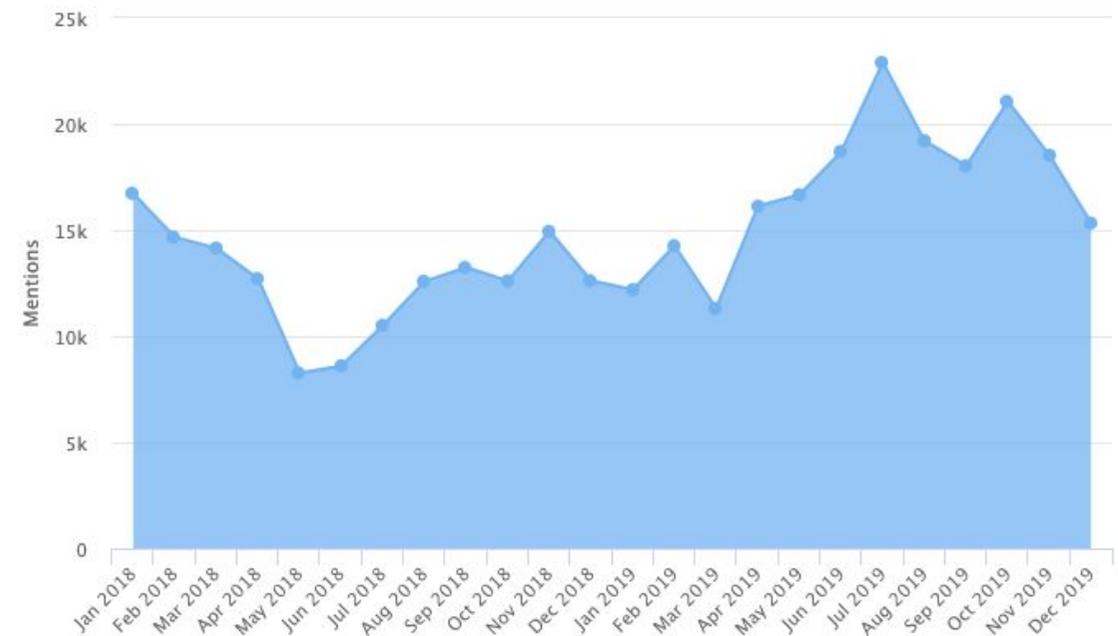
Telemedicine

The main areas of telemedicine are identified as:

| Live telemedicine	Real-time doctor-patient communications that include basic visual and psychiatric examinations, medical history assessments and entail a set of additional services: • Remote pharmaceutical consultations • Teleneuropsychology (remote management of neuropsychological tests • Telenursing (remote diagnostics, symptoms, and health indicators monitoring) • Telerehabilitation (becomes popular in neuropsychology, occupational therapy, and physical therapy) • Telepsychiatry • Teledermatology • Teleophthalmology, etc.
Store-and-forward telemedicine	Acquisition and storage of medical data with transmission to a specialist. This is actively used in pathology, radiology, and dermatology.
Remote patient monitoring	Helps to track patients' health data, especially those with chronic diseases or specific conditions, using wearable gadgets and portable medical devices.

TREND

About ("digital health" OR "healthcare") AND ("telemedicine" OR "telehealth") , in English , between Jan 1, 2018 and Dec 30, 2019

Trendline graph displaying mentions about telemedicine and healthcare over the past 2 years
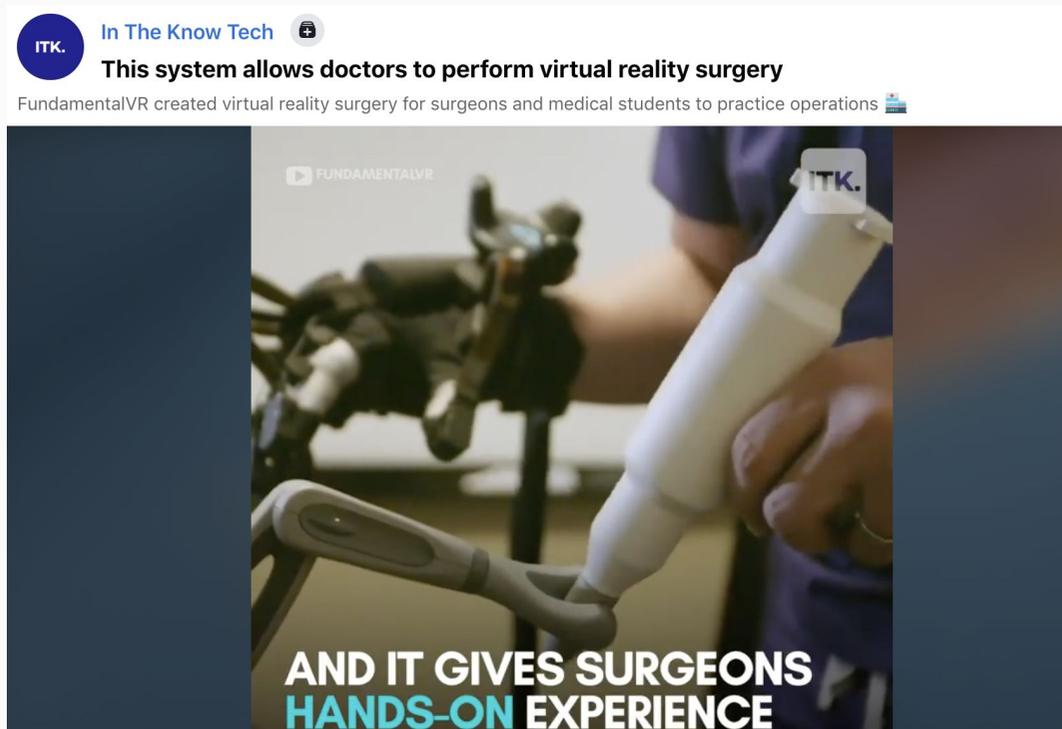
VR and AR in Healthcare
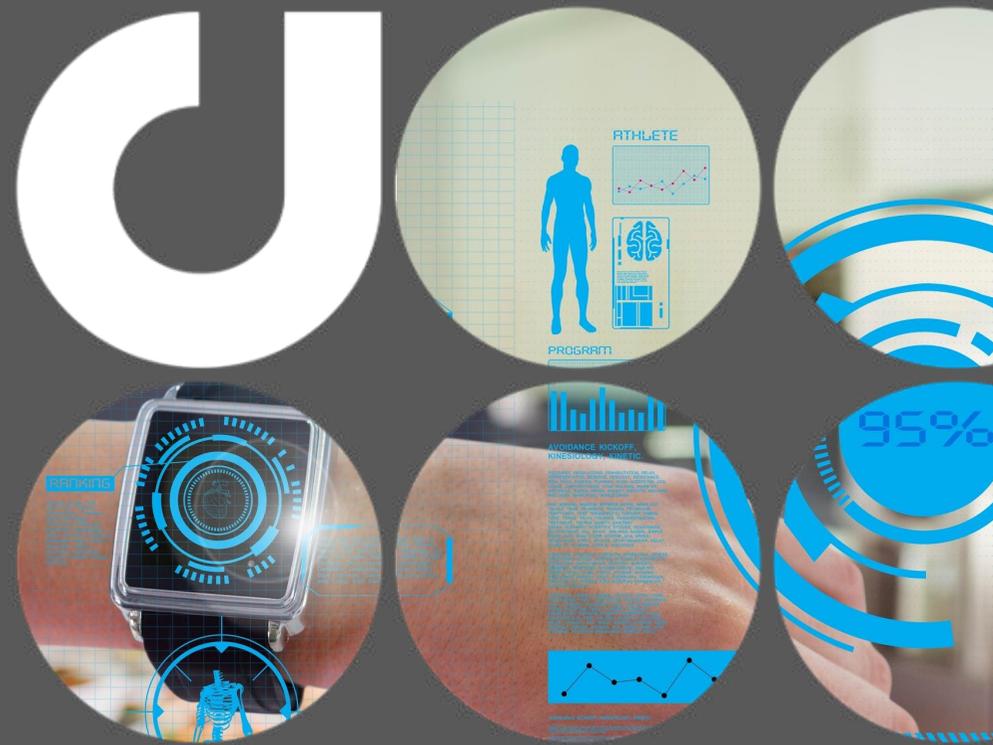
Virtual Reality and Augmented Reality in Healthcare

Virtual Reality and Augmented Reality present themselves as interesting tools for the digital health industry. Augmented reality produces images that are displayed onto the real-world environment, while virtual reality provides us with a completely artificial one. However In both cases, users can see generated images or texts through the assistance of VR/AR lenses.

VR and AR technologies are actively used to diagnose and treat a wide range of diseases and disorders, and **have already proved their worth within the medical education system**. They have also become a feasible option for surgeons to visualize necessary data displayed via sensors, have pre-surgery run-throughs, or even AR assistance during smaller operations.

In The Know Tech

This system allows doctors to perform virtual reality surgery

FundamentalVR created virtual reality surgery for surgeons and medical students to practice operations 🏥

AND IT GIVES SURGEONS
HANDS-ON EXPERIENCE

Virtual reality surgery tool, Fundamental VR allows surgeons and medical students to practice operations

NBC Nightly News with Lester Holt
November 14 ·

Doctors took a high-tech approach to helping two-year-old Ari Ellman, who needed surgery to remove a rare, life-threatening brain tumor. Before the procedure, which had never been done on a patient so young, they used virtual reality and a 3D printed skull to ensure the high-stakes operation went smoothly.

NBCNEWS.COM
How doctors used virtual reality and 3D printing to save a 2-year-old with a brain tumor

638   15 Comments 108 Shares

A recent combination of virtual reality and 3D printing being used in medical practice

VR and AR in Healthcare

There are far more instances of virtual and augmented reality to be explored. Their application in digital healthcare will be disruptive, allowing HCPs to provide more effective and risk-free care.

Surgeons have already performed reconstructive leg surgery and sinus operations with the help of AR. Other examples where it can be used are shown below, along with the trends:

- **Psychological relief and treatment**
- **Immersive VR games, movies, and exercise scenarios for pain reduction, mental conditions, and Post-Traumatic Stress Disorders treatment**
- **Visualization and diagnostics**

From showing data on the patient's body to predicting possible outcomes and working out different treatment scenarios, VR and AR will prove to be an invaluable technology moving forward, which will allow HCPs to perform procedures much more precise than ever before.

TREND

About ("digital health" OR "healthcare") AND ("virtual reality" OR "augmented reality") , in English , between **Jan 1, 2018** and **Dec 30, 2019**

Trendline graph displaying mentions about VR or AR and healthcare over the past 2 years

Blockchain

Blockchain

While most often associated with crypto currencies, the healthcare industry has recognised the potential of blockchain technology for its **ability to remodel the way vital research and useful healthcare data is shared with key stakeholders** such as clinical researchers, doctors, pharmacists, and other healthcare providers.

Identified areas in which of blockchain application would be most useful for the healthcare industry include:

1. Increased Interoperability and Digital Data Management

Up to 1 in 5 patient records[1] are not accurately matched when seeking care at a familiar healthcare location. Moreover, when multiple healthcare systems came into the picture, as many as half the patient records were mismatched.

While systems such as the Healthcare Information Exchange (HIE) already exist to facilitate peer-to-peer exchange of electronic health records among member participants, interoperability remains a challenge due to factors such as establishing a 'trust network', varying data standards, and high transaction costs.

The **decentralized nature of blockchain ledgers allows secure, faster, simplified, cost-effective and reliable access to electronic medical information across authorized network users, while maintaining personal privacy and regulatory compliance.**

Furthermore, blockchain's **ability to track and trace history would enable stronger data integrity and better interoperability** for multiple HCPs and entities to manage individuals' identity (e.g., patient, participant, provider).

In 2018, the Taipei Medical University Hospital and Digital Treasury Corporation (DTCO) launched **phrOS, a blockchain-based mobile app which doctors and patients can use to access and review various information**[2], including images, of a concerned patient's condition, increasing transparency between medical institutions.

References: 1. "Challenges and Strategies for Accurately Matching Patients to Their Health Data," Bipartisan Policy Center
2. Dtco, "Healthcare Blockchain Operating System," phrOS

Blockchain

2. Clinical Research & Data Access

While clinical trials are the bloodline of the healthcare industry, **up to 50 percent of them go unreported**[1] due to the time-consuming nature of filing such reports. However, this action denies the sharing of research discoveries and crucial information, which could contribute towards further research and innovations.

Private blockchains can be used to store information about clinical trials in a secure manner, to ensure that important trial data can be stored and shared amongst the medical research community.

3. Health Supply Chain Management

The WHO, estimates that **tens of thousands of people die each year**[2] from counterfeit drugs. The root cause of many of these counterfeits is a lack of transparency of the producer's supply chain.

Using a blockchain ledger can help to increase trust among doctors, pharmacists, and consumers, and can help manufacturers and HCPs track ready-stock information in the retail market to ensure only legitimate products are being purchased and dispensed.

References: 1. Jane C. Hu, "Nearly Half of the EU's Clinical Trial Results Go Unreported," Quartz
2. Ben Hirschler, "Tens of Thousands Dying from $30 Billion Fake Drugs Trade, WHO Says," Reuters

The Future of Digital Health

The Future of Digital Health

Healthcare is and continues to be an enormous industry plagued by bureaucracy and legacy systems, which lead to inefficiencies.

While governments and healthcare companies have long been the main investors, **major tech companies including Google, Microsoft, and Tencent have started investing more into digital health over the past 5 years.**

This has caused a major shift in areas of focus within digital health as new technologies emerge and regulations evolve due to combined expertise.

In 2019, we saw strong emphasis from these companies invested into **data management and analytics, wellness, and genomics, heralding the marriage of healthcare and technology.**

WHERE THE TOP 5 BIG TECH COMPANIES ARE INVESTING IN DIGITAL HEALTH
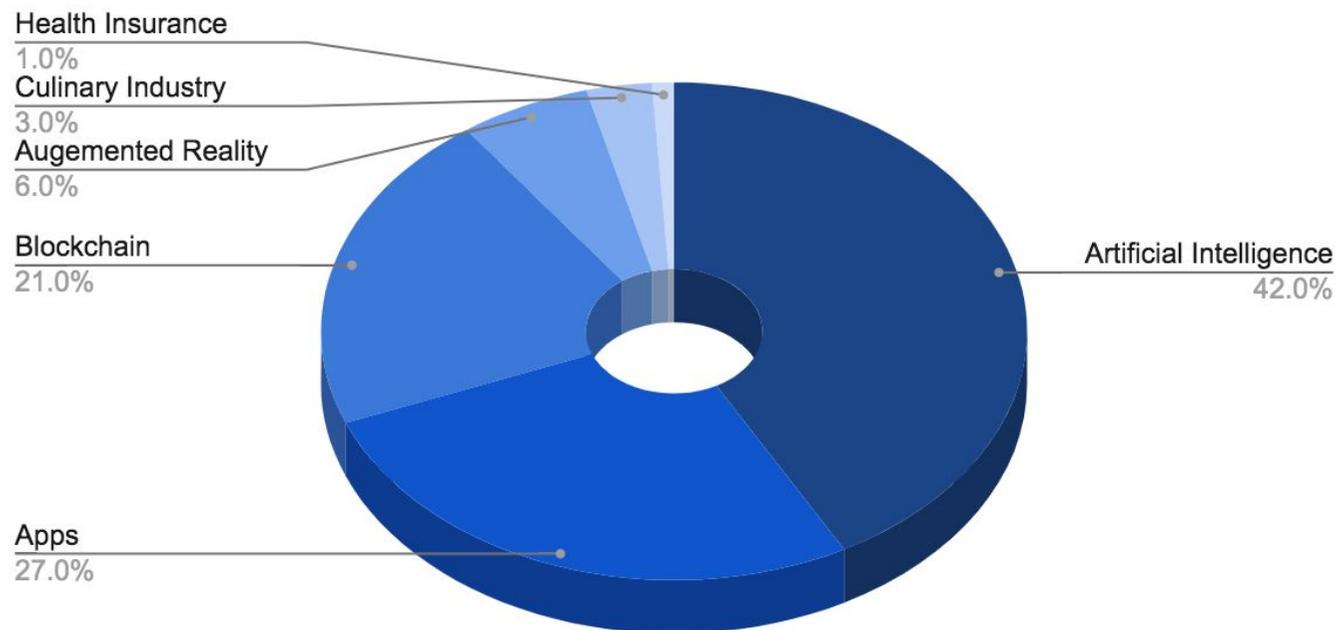
Top 5 Big Tech's digital investment by category
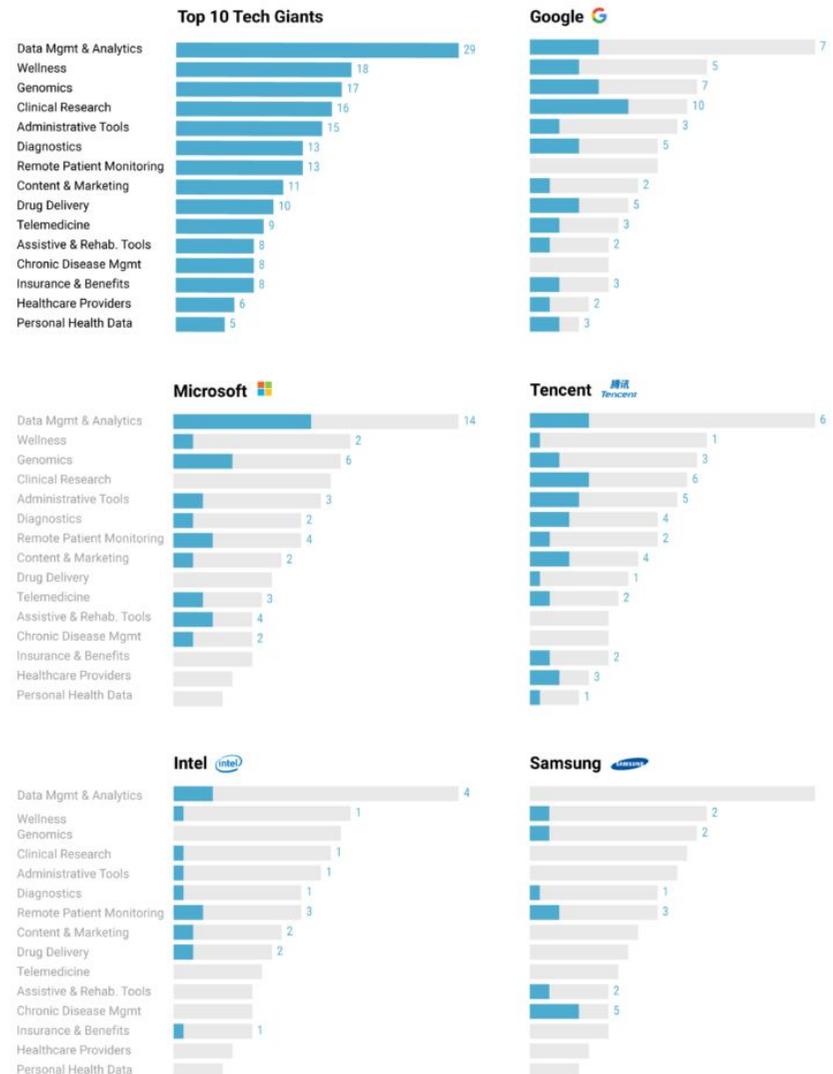
The Future of Digital Health

With CES2020 looming over the horizon, what are the upcoming trend predictions for digital health?

An analysis of the digital health companies that will be present at the event suggests that AI-powered digital health services will be the dominant subject. **The potential of AI and big data for streamlining diagnostics and treatments, as well as improving the accuracy and execution of healthcare-related operations, is too great to ignore.**

As tech giants take steps to expand their ecosystem into the healthcare space, and new and innovative startups emerge to offer new products and services, this provides traditional healthcare players with a variety of potential partnerships that can help further company growth and satisfy unmet needs.

Most discussed Digital Health Topics at CES

Health Insurance
1.0%
Culinary Industry
3.0%
Augemented Reality
6.0%
Blockchain
21.0%
Apps
27.0%
Artificial Intelligence
42.0%

Digimind Social tool showing digital health topics discussed at CES by mention

The Future of Digital Health
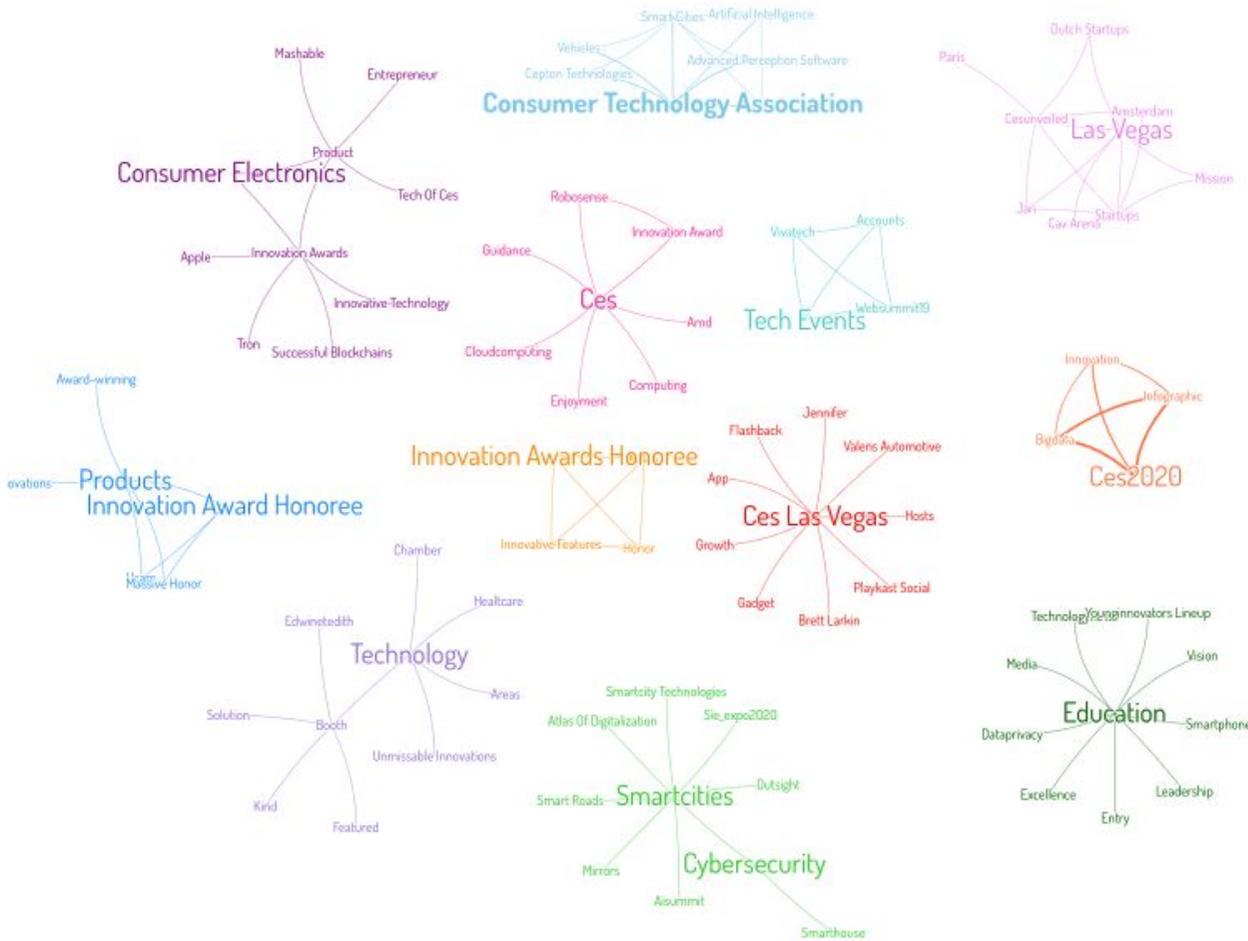
Web chart from DS tool for Digital Health categories

Healthcare companies can leverage the Digital Health Summit at CES to **identify technologies to acquire or partner with** by monitoring the following on social media:

- **Developments with the largest share of voice during CES2020**; this includes individual postings, as well as re-posts and shares indicating the volume of interest
- **Public reaction to specific tools and innovations**; this can help gauge the receptiveness of consumers which can then steer healthcare projects in the right direction

Our resources

On best practices and key trends for the industry on social media:

An Insight Into the **US Pharmaceutical & Healthcare** Industry On Social Media
Download here

Dissecting Opportunities in **Asia Pacific's Pharmaceutical and Healthcare** Industry
Download here

On managing optimizing competitive benchmarking and pharmacovigilance with competitive intelligence & social listening:

Bridging Gaps in Pharmacovigilance with Competitive Intelligence and Social Media Listening
Download here

Competitive Benchmarking Tactics for Pharmaceutical Companies
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About Digimind

Digimind is the leading social media monitoring and competitive intelligence software, designed for brands and agencies who want to accelerate digital transformation through an insights-driven approach. Recognised by Forrester and Gartner, Digimind's best-in-breed technology transforms social and online data into actionable business insights, enabling marketers to effectively plan, execute, and analyse their marketing strategy.

Founded in 1998, Digimind is headquartered in New York, Paris, Singapore, and Rabat, serving more than 600 customers worldwide including LinkedIn, Sony, McCann Worldwide, and Lexus.

More information on www.digimind.com

More resources on http://digimind.com/resources/

Want to know more about Digimind and how our best in breed social listening and analytics technology can help boost *your* product development and launch strategies?

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