5 Trends Appear on the Gartner Hype Cycle for Emerging Technologies, 2019

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The Gartner Hype Cycle highlights the 29 emerging technologies CIOs should experiment with over the next year.

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Today, companies detect insurance fraud using a combination of claim analysis, computer programs and private investigators. The FBI estimates the total cost of non-healthcare-related insurance fraud to be around $40 billion per year. But a maturing emerging technology called emotion artificial intelligence (AI) might make it possible to detect insurance fraud based on audio analysis of the caller.
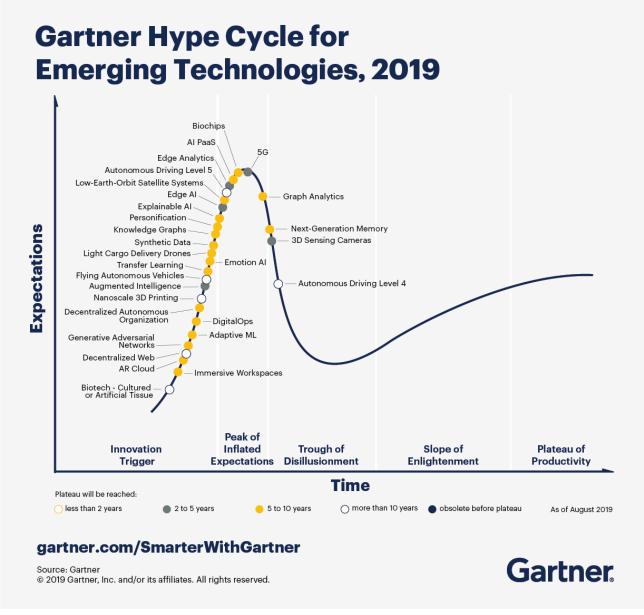
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In addition to catching fraud, this technology can improve customer experience by tracking happiness, more accurately directing callers, enabling better diagnostics for dementia, detecting distracted drivers, and even adapting education to a student's current emotional state. Though still relatively new, emotion AI is one of 21 new technologies added to the Gartner Hype Cycle for Emerging Technologies, 2019.

"The 2019 Hype Cycle highlights the emerging technologies with significant impact on business, society and people over the next five to 10 years," says **Brian Burke (https://www.gartner.com/analyst/26081/Brian-Burke)**, Research Vice President, Gartner. "Technology innovation is the key to competitive differentiation and is transforming many industries."

" Technologies will also eventually provide a more seamless experience that improves the health, intelligence and strength of humans"

This year's emerging technologies fall into five major trends: Sensing and mobility, augmented human, postclassical compute and comms, digital ecosystems, and advanced AI and **analytics (https://www.gartner.com/smarterwithgartner/a-data-**

and-analytics-leaders-guide-to-data-literacy/).

Sensing and mobility

This trend features technologies with increasingly enabled mobility and the ability to manipulate objects around them, including 3D sensing cameras and more advanced autonomous driving. As sensors and AI evolve, autonomous robots will gain better awareness of the world around them. For example, emerging technologies such as light cargo delivery drones (both flying and wheeled) will be better able to navigate situations and manipulate objects. This technology is currently hampered by regulations, but its functionality continues to advance. As sensing technology

continues to evolve, it will aid more advanced technologies like the Internet of Things (IoT). These sensors also collect abundant data, which can lead to insights that are applicable across a range of scenarios and industries. Other technologies in this trend include: AR cloud, autonomous driving levels 4 and 5, and flying autonomous vehicles.

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Augmented human

Augmented human technologies improve both the cognitive and physical parts of the human body by including technologies such as biochips and emotion AI. Some will provide "superhuman capabilities" — for example, a prosthetic arm that exceeds the strength of a human arm — while others will create robotic skin that is as sensitive to touch as human skin. These technologies will also eventually provide a more seamless experience that improves the health, intelligence and strength of humans. Other

technologies in this trend include: Personification, augmented intelligence, immersive workspace and biotech (cultured or artificial tissue.)

Emerging Technology Trends 2019

Sensing and Mobility
- 3D sensing cameras
- AR cloud
- Light-cargo delivery drones
- Flying autonomous vehicles
- Autonomous driving Levels 4 and 5

Augmented Human
- Biochips
- Personification
- Augmented intelligence
- Emotion AI
- Immersive workspaces
- Biotech (cultured or artificial tissue)

Postclassical Compute and Comms
- 5G
- Next-generation memory
- Low-earth-orbit satellite systems
- Nanoscale 3D printing

Digital Ecosystems
- DigitalOps
- Knowledge graphs
- Synthetic data
- Decentralized web
- Decentralized autonomous organizations

Advanced AI and Analytics
- Adaptive machine learning (ML)
- Edge AI
- Edge analytics
- Explainable AI
- AI PaaS
- Transfer learning
- Generative adversarial networks
- Graph analytics

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Postclassical compute and comms

Classical or binary computing, which uses binary bits, evolved by making changes to existing, traditional architectures. These changes resulted in faster CPUs, denser memory and increasing throughput. Post-classical computations and communications are using entirely **new architectures (https://www.gartner.com/smarterwithgartner/the-cios-guide-to-quantum-computing/)**, as well as incremental advancements. This includes **5G (https://www.gartner.com/smarterwithgartner/key-questions-to-evaluate-and-plan-for-enterprise-5g/)**, the next-generation cellular standards, which has a new architecture that includes core slicing and wireless edge. These advancements allow low-earth-orbit (LEO) satellites to operate at much lower altitudes, around 1,200 miles or less, than traditional geostationary systems at around 22,000 miles. The result is global broadband or narrowband voice and data network services, including areas with little or no existing terrestrial or satcom coverage. Technologies in this trend include: Next-generation memory and nanoscale 3D printing.

Digital ecosystems

Digital ecosystems are web-like connections between actors (enterprises, people and things) sharing a digital platform. These ecosystems developed as digitalization morphed traditional value chains, enabling more seamless, dynamic connections to a variety of agents and entities across geographies and industries. In the future these will include decentralized autonomous organizations (DAOs), which operate independently of humans and rely on smart contracts. These digital ecosystems are constantly evolving and connecting, resulting in new products and opportunities. Other technologies in this trend include: DigitalOps, knowledge graphs, synthetic data and decentralized web.

Advanced AI and analytics

Advanced **analytics (https://www.gartner.com/smarterwithgartner/a-data-and-analytics-leaders-guide-to-data-literacy/)** is the autonomous or semi-autonomous examination of data or content using sophisticated tools beyond those of traditional business insights. This is the result of new classes of algorithms and data science that are leading to new capabilities, for example transfer learning, which uses previously trained machine learning models as advanced starting points for new technology. Advanced analytics enables deeper insights, predictions and recommendations. Other technologies in this trend include: Adaptive machine learning, **edge AI (https://www.gartner.com/smarterwithgartner/innovate-with-edge-ai/)**, edge analytics, explainable AI, AI PaaS, generative adversarial networks and graph analytics.

About the Hype Cycle

The Hype Cycle for emerging technologies distills insights from more than 2,000 technologies that Gartner profiles into a succinct set of must-know emerging technologies and trends. With a focus on emerging tech, this Hype Cycle is heavily weighted on those trends appearing in the first half of the cycle. This year, Gartner refocused the Hype Cycle to shift toward introducing new technologies not previously highlighted in **past iterations of this Hype Cycle (https://www.gartner.com/smarterwithgartner/5-trends-emerge-in-gartner-hype-**

cycle-for-emerging-technologies-2018/). These technologies are still important, but some have become integral to business operations and are no longer "emerging" and others have been featured for multiple years.

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🔒 **Recommended resources for Gartner clients*:**

Gartner clients can learn more about the 29 technologies in the full report **Gartner Hype Cycle for Emerging Technologies, 2019 (https://www.gartner.com/document/3956015)**.

*Note that some documents may not be available to all Gartner clients.

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