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Why intelligence at the edge is critical for your organization

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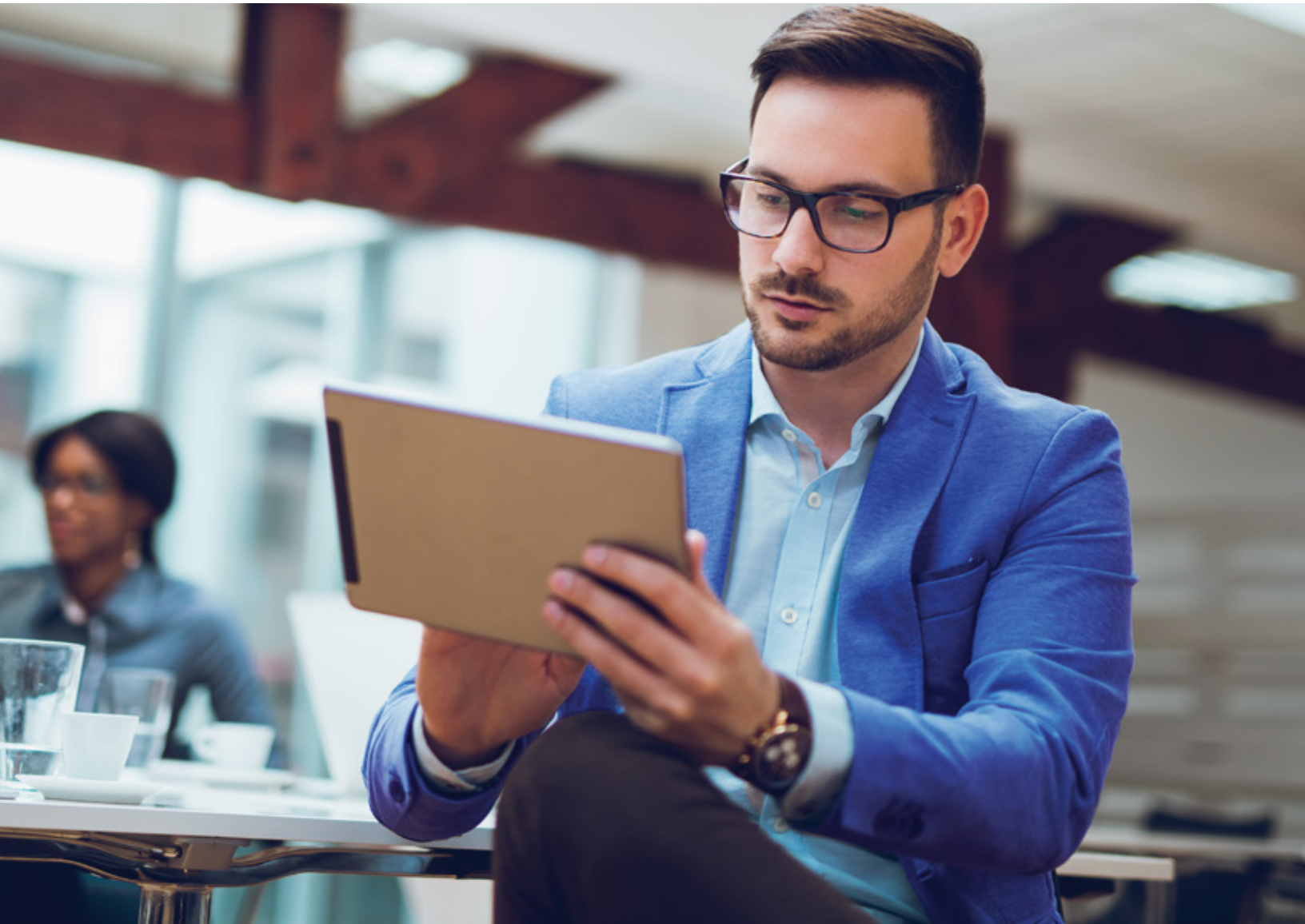

Traditional cloud computing networks were highly centralized with data being captured on the outermost edges and transferred back to the main servers for processing. With advancements in IoT, we see an exponential rise in the number of edge devices. IoT devices today are more powerful, capable of harvesting, storing, and processing more data than ever before. This is making an impact on household devices closer to us and in industrial settings.

According to insights from a leading professional services company, by 2023, **70%** of enterprises are likely to run some amount of data processing at the edge. It also predicts that the global market for edge intelligence in 2021 will expand to **USD 12 billion**, continuing at a CAGR of around **35%**.

The intelligent edge is a continually growing network of systems and devices providing users with real-time insights and experiences. A premium example is a self-driven car. Self-driving cars are constantly scanning the surrounding environment and evaluating the situation, adjusting their path based on nearby occurrences. Real-time data processing is extremely critical in these cases and their onboard edge AI systems are responsible for data processing from data storage to manipulation to analysis.

Another successful adoption of intelligence at the edge is a facial recognition system. Computer vision algorithms detect specific and distinctive features of a person's face by analysing the data collected by the camera. Deployed on edge devices, facial recognition applications that operate for tasks like security can function reliably even if they are not connected to a cloud.

So, what is Edge Computing?

Edge computing is often defined as placing computing resources closer to the network edge where data is generated. This helps in accelerating analysis of data, and enables businesses to act quickly on insights. With the increase in the number of IoT devices, edge devices can contribute immensely to the amount of data being generated around the globe. Edge computing generates the need for more efficient use of bandwidth, reduction in latency, and resiliency against poor, unreliable and lost connectivity.

The intelligent edge combines powerful computing capabilities, artificial intelligence, data analytics and advanced connectivity to quickly act on data much closer to where it originates and needs to be consumed.

What is driving Intelligence at Edge?

Intelligence at the edge is driven by several factors. Some of these factors include:

Computational Power: The latency between the cloud and the edge devices can be too long for critical functions such as motion control and image processing. Data can be exposed to the threat of hackers and large data transfers can take up a lot of bandwidth. To be able to perform as much processing and analytics possible at the edge, computing platforms based on single-board computers (SBCs) provide designers with flexibility in the configuration of the overall platform, and the ability to pick only what's required, while offering the ability to scale.

Connectivity: 5G networks equip enterprises to strategically distribute computing resources across the intelligent edge. The speed and agility to process data in real-time and use it to improve productivity is the most desirable value of 5G. IoT can generate data for edge intelligent systems that they can make use of, while 5G technology is essential in strengthening enterprise opportunities for the continued advancement of both edge intelligence and IoT.

How is it going to impact organizations?

Intelligence at the edge can lead to significant benefits for organizations. Some of these benefits include:

Lowered costs: This is made possible by enabling more efficient use of bandwidth and greater network visibility

Powering the next industrial revolution: Businesses can gain much greater visibility into their physical operations through the ability to collect more data from edge systems

Reliable operations with intermittent connectivity: Organizations can optimize data capture and analysis at the edge to create quick, robust, and actionable business intelligence

Enable quick decision making: Pushing intelligence right to the last node enables extremely quick and seamless data crunching and output generation. They can also perform complex ML implementations through on-device compute operations and offload server dependency

Create a flexible, scalable, secure, and automated system: Armed with insights, organizations can look at automating a majority of core business processes

How the Future of Edge AI look like?

According to Gartner's recently published new "Tech Innovators in Edge AI", there are many companies that are leading innovation in this space. Some of these companies include:

Reality AI: This company is breathing new life into old processors by offering automated AI feature discovery and optimization from existing sensor data.

Kneron: This firm is innovating with low-power AI systems on a chip by improving the autonomy of edge devices made possible by reducing dependency on the cloud for advanced analytics and control.

Matroid: This company is innovating by providing customers with an easy-to-use dashboard for creating, training, and deploying computer vision (CV) models. This helps in democratizing AI for non-technical clients.

Let us also look at how the future will shape up. Research firm, Gartner, analysed over 30 technology providers and over 100 adopters. Some of the major findings were:

- Industries such as manufacturing, media & entertainment, telecom and retail are the early adopters of intelligence at the edge
- Advancements in model optimization are critical to the fast-tracked expansion of intelligence at the edge
- Intelligence at the edge will continually lead to the growth of connected systems, which will further accelerate the adoption of IoT and IoT-enabled products and services
- Until 2025, intelligence at the edge will remain in the nascent stages due to the lack of knowledge and expertise in empowering the edges (embedded, device and local servers, etc.)

References

https://blogs.gartner.com/anthony_bradley/2020/11/03/announcing-gartners-new-tech-innovators-in-edge-ai/

https://www2.deloitte.com/xe/en/insights/industry/technology/technology-media-and-telecom-predictions/2021/edge-intelligence-fourth-industrial-revolution.html

Conclusion

Intelligence at the edge is a technology of the future and will define the growth paths for businesses in the future. The ones realizing the value of intelligence at the edge will be the ones conquering the markets in the future. The current pandemic has made us realize the value of being on the cloud. We should not be waiting for another pandemic to hit us before we realize the importance of intelligence at the edge. Intelligence at the edge will future-proof businesses by strengthening cloud and analytics capabilities.

About the Author

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Anshul is a Senior Consultant with New Ways of Working practice within LTI. He is a part of transformation group and focusses on research, marketing and branding of transformation services. Anshul has more than 5 years of relevant industry experience working as a software developer, tech lead and marketing specialist. He holds a Master of Business Administration degree from Indian Institute of Management, Calcutta.