

Edge computing will be key to automating cars and factories

It enables faster processing; it will also save bandwidth

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Many of us are looking forward to totally autonomous vehicles. One of the core technologies making them possible is what's called edge computing. If the car has to suddenly brake or take a turn, traditional technology would require the data that its sensors and cameras are capturing to be sent to a data centre, which would analyse it and send it back to the car to take appropriate action. Internet speeds are fast today. But even those speeds are often not good enough for the instantaneous decisions the car needs to take. And there could be areas where there's no internet. "So you need an edge computing device in the car where the decision can be taken faster," says Anand Patil, director of systems engineering at Cisco.

There are many similar use cases emerging, and for that reason, edge computing is expected to become widespread in the years to come. The algorithms and software pieces that enable edge computing have been around for some time. But, as semiconductor industry veteran Dasaradha Gude says, it is only in the last two to three years that custom processors are being made that can be used for specific applications such as voice, video and image processing, which are essential in

MOST DATA WILL SOON BE PROCESSED OUTSIDE DATA CENTRES

By 2025, the majority of the data is expected to be processed outside a traditional data centre or cloud. Edge solutions will be the most feasible option to facilitate real-time data processing, at or near the source of data generation.



Srinivas Rao | SENIOR DIRECTOR, SYSTEMS ENGINEERING, DELL TECHNOLOGIES INDIA

The algorithm and software pieces that enable edge computing have been there for quite some time, but it is only in the last 2-3 years that custom processors are being made that can be used for voice, video, image processing, etc, which are essential in edge computing.

Dasaradha Gude | CHAIRMAN & CEO, INVECAS



Industry 4.0 focuses extensively on connecting enterprise operations in order to deliver intelligent decision-making and real-time insights. Edge computing enables the enterprises to do exactly that, seamlessly and with ease.

Pankaj Kitchlu | SYSTEMS ENGINEERING DIRECTOR - INDIA-SAARC, JUNIPER NETWORKS



Edge computing reduces latency and saves bandwidth. When an autonomous car has to decide when to apply brakes, accelerate or turn, you have to put an edge computing device in the car where the decision can be taken faster.



Anand Patil | DIRECTOR, SYSTEMS ENGINEERING, CISCO

A proof of concept we are doing in India is in the FMCG sector using video feeds. The edge compute application constantly acts on the video feed to detect anomalies.

As new components are manufactured, the edge node learns to find new anomalies in them.

Girish Dhanakshirur | DIRECTOR & CTO IBM CLOUD INDIA



Our edge computing system deployed in ITC's factories takes inputs from cameras and within milliseconds can detect bad products and reject them. The system has reduced defective products per machine per month from almost 30,000 to less than 1,000.

Aniruddha Banerjee | CO-FOUNDER, SWITCHON



edge computing. These custom processors are powerful enough to store and do the necessary computations themselves. "And the technology is evolving rapidly," says Gude.

Edge computing has another huge benefit - it saves bandwidth, since data is not being sent on the network. In facial recognition and motion analytics cameras, for instance, the savings can be huge because those images require massive bandwidth. "The edge processor can process images and only relay the processed data to the data centre for further analytics, reducing traffic," says Patil.

Something similar is what Bengaluru-based Ecolibrium's

IoT and edge computing solution does. The edge devices monitor air quality and temperature patterns in a room and send alerts to the central building management system when any of the indices breach the threshold level. Company founder Harit Soni says the solution is being used by real estate services provider JLL India to monitor the air quality of office spaces it manages.

Girish Dhanakshirur, director & CTO of IBM Cloud India, says digital savvy users expect rich multimedia and real-time information on the go, and some use cases - like monitoring and alerting in oil rigs - may not require all-time connectivity. "Edge com-

puting's key attributes such as decentralised processing, distributed cloud computing, and offline availability can address some of these requirements, alongside a centralised cloud solution," he says. IBM is using such solutions in India in fleet management services - to track the flow of goods, to send alerts, to plan routes.

It is using them to detect anomalies in manufacturing lines from video feeds. The edge compute application constantly acts on the video feed. And as new components are manufactured, the edge node has to learn to find new anomalies in these new components. These are two way information flows between the edge node and the cloud serv-

ers. The edge node sends out new information to the cloud, and the cloud servers build and push the new AI models built from the learning to the edge nodes. Once the edge nodes get the new model, they will then do the processing and anomaly detection themselves.

SwitchOn is an Indian IIoT (industrial internet of things) company that has deployed similar AI models in edge computing systems at FMCG major ITC's manufacturing plants. The system takes inputs from cameras and within milliseconds can detect bad products and reject them in a completely automated way. The company's co-founder Aniruddha Banerjee says prior to this deployment, almost 30,000 defective products per machine per month would go undetected. Their system has brought this down to 1,000.

Dell Technologies, along with PTC, a company that offers IIoT software applications, has introduced the Manufacturing Edge Reference Architecture to help manufacturing firms deploy edge computing solutions to increase efficiency. This edge tool helps in areas like asset optimisation and predictive maintenance because it derives data from multiple sources in a factory - such as computers, mobile devices and machinery (through sensors) - on a real-time basis and therefore is able to send alerts soon. This helps in identifying and eliminating inefficiencies between each production cycle of each machine.

Srinivas Rao, senior director of system engineering at Dell Technologies India, says it is expected that by 2025, the majority of the data will be processed outside a traditional data centre or cloud.