

TECHNO TALKS

EDGE AI

INTRODUCTION

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VOLUME - 4

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2026**

TECHNO TALKS

MISSION

1. To create and disseminate knowledge and learning, innovation, and research in order to enhance society in meaningful and sustainable ways.
2. To encourage students to acquire multidisciplinary skills-sets by providing innovative education and research opportunities.
3. To strengthen ethical IT professionals and entrepreneurs through problem-solving and lifelong learning skills.

VISION

To empower the young minds as world-class engineering professionals equipped with value- based contemporary skills and tools in the field of Information Technology.

"There's always something going on on the SSIPMT campus, and it's developed into a fascinating destination for the world's best minds to come together and share their vast reservoirs of knowledge and skills, and it has become a popular destination for students. The Institute devotes a significant amount of time and resources to assist students with innovations and startups. In addition, the institution provides assistance with their communication skills, critical thinking capacity, sense of responsibility and ethical values and ultimately enhances the placements on the campus.



Shri Nishant Tripathi
Chairman (B.G), SSIPMT

At SSIPMT, we are committed to provide our students with the best possible start in life. As part of our goal, we wish to inculcate in our students a passion for learning that will enable them to make a positive contribution to the world in which they live. Students, parents, and the institution all contribute to the creation of a vibrant learning environment on our campus. The success of our students is a direct outcome of the quality of our collaborative effort."



"It gives me immense pleasure to pen a few words about our newsletter meant for churning out the latent writing talent which bears immense potentiality of sharpening student's communication skill as part of student's overall personality development. I congratulate all the contributors and the editorial board for bringing out such a beautiful magazine, in SSIPMT, it is believed and practiced that excellence is a continuous process and in pursuit of which the institute has made deep forays into contributing world-renowned technocrats, successful entrepreneurs, competent & Innovative engineers.

Dr. Alok Kumar Jain
Principal, SSIPMT

My Best wishes to the Techno Talks to achieve all of its objectives."

"It brings me great pleasure to congratulate the Information Technology department's students, faculty, and staff on the release of the department's inaugural newsletter. Published biannually, it serves as an important source of information on academics, achievements, and departmental innovations. The newsletter provides a platform for teachers and students to share their ideas and perspectives, supporting their academic growth. I strongly believe that one must find meaning in daily work, and knowing that your efforts positively impact others brings out your best. It is truly an honor to be part of such a motivated environment. I wish all team members the very best for the publication."

Mr. Sunil Dewangan
Asst. Professor, HOD, IT Dept.



EDGE AI MEMORANDUMS



Mr. Sunil Dewangan
Assistant Professor
HOD, IT Dept.

"Edge AI is best understood not as a miniaturized cloud, but as a digital reflex system. Similar to how the human body withdraws from a hot surface via spinal reflexes before the brain processes pain, Edge AI enables devices to make immediate, localized decisions without relying on cloud round trips. Rather than deeply analyzing all incoming data, edge devices operate on trained models to react in real time, escalating only anomalies to the cloud for more complex processing. This shifts the traditional paradigm from centralized intelligence with passive endpoints to distributed, autonomous systems. As a result, Edge AI significantly reduces latency, conserves bandwidth, enhances data privacy, and ensures continued operation even in the absence of network connectivity. In essence, edge devices act as first responders handling the majority of events locally and forwarding only critical exceptions for higher level analysis."

"Edge AI is a technology that enables artificial intelligence models to run directly on local devices instead of relying on cloud-based servers. These devices include smartphones, IoT sensors, and embedded systems. By processing data at the edge, it ensures faster decision-making and reduces dependency on internet connectivity. Edge AI improves security and privacy because data remains on the device rather than being sent to external servers. It is commonly used in applications such as smart surveillance, healthcare monitoring, autonomous systems, and voice assistants. This approach also reduces network costs and allows real-time analysis, making systems more efficient, responsive, and reliable in various environments.."



Dr. Advin Manhar
(Assistant Professor, IT Dept.)

"The innovative concept of Edge AI has gained significant attention in recent times due to its ability to process data closer to the source rather than relying on centralized cloud systems. Edge AI integrates artificial intelligence with edge computing, enabling devices such as smartphones, sensors, and IoT systems to perform real-time data analysis and decision-making with reduced latency and improved efficiency. This approach enhances data privacy and security, as sensitive information remains on local devices, minimizing the risk of breaches. Edge AI is widely applied in areas such as healthcare monitoring, smart homes, autonomous vehicles, and industrial automation, where quick response and reliability are essential. Thus, Edge AI is emerging as a powerful technology driving innovation and transforming modern digital systems."



Mrs. Akanksha Mishra
(Assistant Professor, IT Dept.)

"Edge AI is an exciting technology where artificial intelligence works directly on devices like mobile phones, cameras, and smart machines without depending on the internet. It is already used in real-life applications such as face unlock, self-driving cars, and smart surveillance systems. The biggest advantage is fast decision-making and better data privacy. Learning Edge AI can boost your placement opportunities, as industries are actively looking for such skills. It is especially useful in areas with poor internet connectivity. I encourage you to explore this topic, as it can open doors to innovative projects and high-demand career paths."



Mr. Niraj Sahu
(Assistant Professor, IT Dept.)

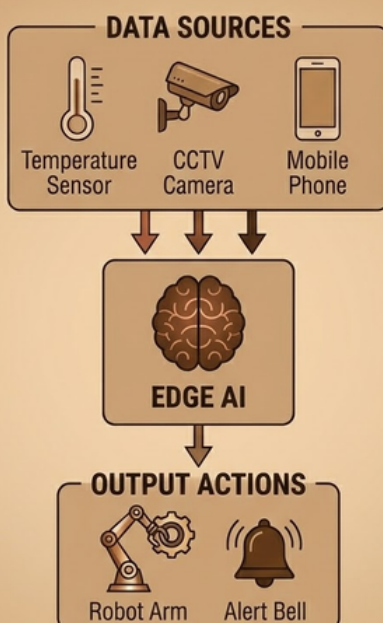
EDGE AI

- Introduction
- Advantages & Disadvantages
- Facts about edge AI
- Application of Edge AI
- Uses in various fields
- Fututre of edge AI

At a Glance

Edge artificial intelligence refers to the deployment of AI algorithms and AI models directly on local edge devices such as sensors or Internet of Things (IoT) devices, which enables real-time data processing and analysis without constant reliance on cloud infrastructure.

In essence, “edge AI”, or “AI on the edge”, refers to the combination of edge computing and artificial intelligence to perform machine learning tasks directly on interconnected edge devices. Edge computing allows data to be stored close to the device location, and AI algorithms enable processing right on the network edge, with or without an internet connection. This capability facilitates data processing within milliseconds.

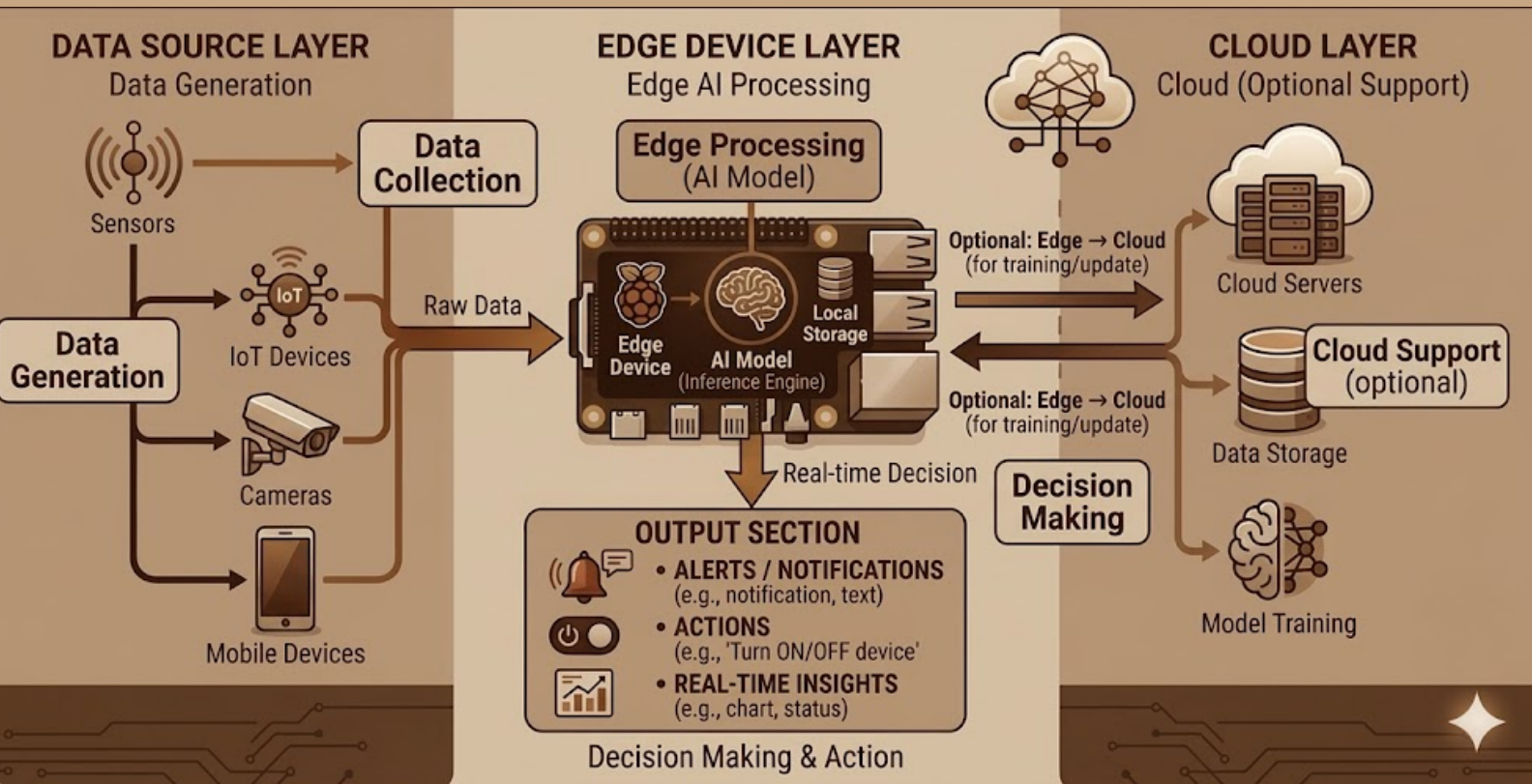


FAST
Real-time response



SECURE
Data stays local

STRUCTURE OF EDGE AI



Did you know!

Edge AI can work without the internet by processing data directly on the device. This makes it faster, more reliable, and useful even in low-connectivity areas like parts of India, while also keeping data more private.

“The development of Edge AI is being accelerated by technologies like IoT and 5G.”

-Ayushi Chandrakar
6th semester, IT

“Edge AI is giving eyes, ears, and a brain to the Internet of Things.”

- Gagan Rai
6th semester, IT

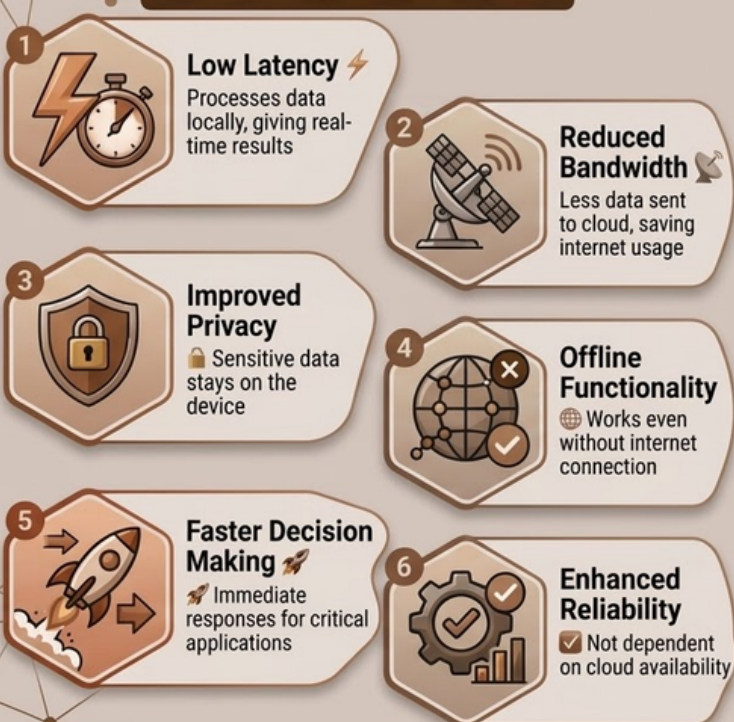
ADVANTAGES

- Lowers latency by processing data close to the source rather than using cloud servers.
- Enhances data security and privacy because private information remains on local devices.
- Reduces data transit to the cloud, which lowers bandwidth consumption.
- Allows for real-time decision-making in applications like as smart devices and driverless cars.
- Functions even when there is little to no online connectivity.
- Increases dependability by reducing the reliance of systems on centralized infrastructure.
- In essential applications, quicker response times enhance user experience.

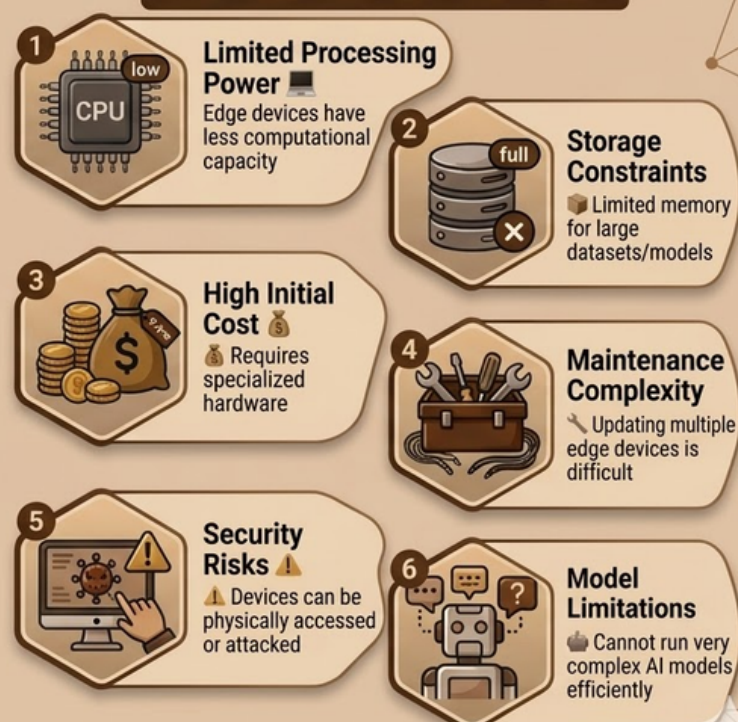
DISADVANTAGES

- High setup costs because of the infrastructure and specific devices.
- Restricted processing capacity in contrast to cloud-based solutions.
- Multiple dispersed edge devices are challenging to maintain and control.
- It might be challenging to scale and update models across devices.
- Hazards to security in the event that edge devices are compromised or physically accessed.
- Edge devices have a limited amount of storage.
- Need specialized knowledge for both maintenance and implementation.

ADVANTAGES OF EDGE AI



DISADVANTAGES OF EDGE AI



APPLICATIONS OF EDGE AI

By enabling real time data processing on devices without depending on the cloud, edge AI is revolutionizing a number of industries. It improves industry productivity and supports healthcare monitoring while enabling autonomous vehicles to make quick decisions and assisting smart surveillance in quickly detecting activities. Additionally, wearables, smart homes, and retail employ it to provide quicker and safer services. While Edge AI is used in many different applications, they all depend on its key advantages: Real-time processing, minimal latency, offline functionality and enhanced data privacy.

Real world applications of Edge AI

1. DATA SOURCE LAYER (Data Generation)



Sensors



Cameras

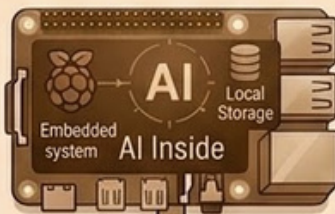


IoT Devices



Mobile Devices

2. CENTRALIZED EDGE PROCESSING HUB



1. SMART SURVEILLANCE

Real-time recognition without cloud.



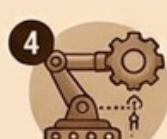
2. AUTONOMOUS VEHICLES

Instant obstacle detection.



3. HEALTHCARE WEARABLES

Local vitals monitoring & alerts.



4. INDUSTRIAL AUTOMATION

Predictive maintenance & fault detection.



5. SMART HOMES

Quick voice command response.



6. RETAIL TECH

Customer behavior analysis.



7. SMART AGRICULTURE

Crop & soil monitoring in fields.



8. ENERGY MANAGEMENT

Fault detection & load optimization.

“Imagine a world where devices think and act instantly without waiting for the cloud this is the power of Edge AI.”

-Palak Singh Rathour

6th semester, IT

FACTS ABOUT EDGE AI

- Instead of using centralized servers, Edge AI processes data locally on gadgets like smartphones, sensors, and Internet of Things devices.
- Applications including autonomous systems, healthcare monitoring, and smart surveillance make extensive use of it.
- Edge AI makes systems faster and more effective by reducing reliance on cloud computing.
- The development of Edge AI is being accelerated by technologies like IoT and 5G.
- Particularly in crucial settings like industrial automation, it supports real-time analytics.
- Wearable technology is increasingly utilizing edge AI for warnings and health tracking.
- It is essential to the development of intelligent transportation systems and smart cities.

“Edge AI can actually save battery and bandwidth by processing only important data and ignoring unnecessary information before sending anything to the cloud.”

-Shrejal Sharma
6th semester, IT

FUTURE OF EDGE AI

- By enabling real-time processing on gadgets, edge AI is influencing the future. It provides reduced reliance on the cloud, improved privacy, and quicker reaction times. It can cut latency by as much as 50–70%.
- It fuels gadgets for effective living and real-time monitoring in smart homes and security. In the upcoming years, Edge AI is anticipated to be used by billions of IoT devices.
- For autonomous systems like robotics and self-driving cars, edge AI is essential. For speed and privacy, it also makes it possible for smaller generative AI models to operate on smartphones.
- Performance and privacy are being enhanced by developments in 5G, federated learning, and AI hardware. Future Trend: Advanced healthcare, driverless vehicles, and smart cities will be powered by Edge AI and 5G.
- In general, Edge AI will promote faster, safer, and smarter digital

WHAT'S NEXT FOR EDGE AI IN 2026?



1

AI-POWERED
CHIPS



2

ENHANCED
5G INTEGRATION



3

ENERGY
EFFICIENCY



4

WIDER
ADOPTION

NEWS LETTER TEAM



Mrs. Mahejabi Khan
Assistant Professor
(Incharge)Department of Information Technology

“I feel that Edge AI is bringing a real shift in how technology works today. Instead of sending all data to the cloud, processing it closer to the source makes systems much faster and more efficient.

What I find most important is how it also helps in improving data privacy while still enabling real time decision making. Today, we can clearly see its impact in areas like healthcare, smart devices, and automation.

I always encourage my students to explore such emerging technologies. Edge AI is not just a concept to study, but something they should try to understand practically. It opens up many opportunities for innovation and helps them prepare better for the future.”

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