Edge computing has emerged as a promising technology in the healthcare industry, particularly in the area of in-hospital patient monitoring. In-hospital patient monitoring involves the continuous measurement and analysis of patient vital signs such as heart rate, blood pressure, respiratory rate, and temperature. This data is critical for diagnosing and treating patients and for ensuring their safety while in the hospital.

Traditionally, in-hospital patient monitoring systems have been centralized, with data being sent to a central server for processing and analysis. However, this approach has some limitations, such as the potential for data loss due to network latency, security concerns, and the need for high-bandwidth connections.

Edge computing offers a distributed computing architecture that enables processing and analysis of data closer to the source, i.e., at the edge of the network, which can address these limitations. In an edge computing-enabled in-hospital patient monitoring system, the data is processed and analyzed locally at the edge devices such as sensors, wearables, and gateways. This reduces the amount of data that needs to be transmitted to the central server, reducing network latency, and improving the reliability and security of the system.

Edge computing also enables real-time monitoring of patient vital signs and can trigger alerts in case of any abnormalities, allowing for timely intervention by healthcare professionals. This is particularly important in critical care settings where delays in response can have serious consequences for the patient's health.

Another advantage of edge computing in in-hospital patient monitoring is its ability to enable personalized patient care. Edge devices can collect data on a patient's vital signs, activity level, and other health-related metrics and use this data to generate personalized insights that can inform the patient's care plan.

Furthermore, edge computing can also help reduce healthcare costs by enabling remote monitoring of patients. Patients can be monitored from their homes, reducing the need for hospital readmissions and allowing healthcare professionals to intervene proactively if any issues arise.

In conclusion, edge computing has the potential to revolutionize in-hospital patient monitoring by enabling real-time monitoring, personalized patient care, and remote monitoring while addressing the limitations of traditional centralized systems. The adoption of edge computing in healthcare is still in its early stages, but it is expected to grow rapidly in the coming years as more healthcare organizations recognize its benefits.

Edge computing is a groundbreaking paradigm in the field of computing that has gained significant attention and traction in recent years. Edge computing has emerged as a powerful solution to address these issues by bringing computation and data storage closer to the edge of the network, closer to where data is generated and consumed. At its core, edge computing aims to decentralize data processing and computation, shifting it away from the centralized data centers that define the traditional cloud computing model. Instead, edge computing distributes these capabilities to the network's periphery, closer to the source of data generation, such as IoT devices, sensors, and mobile devices. This strategic positioning of computational resources minimizes the time it takes for data to travel back and forth from the cloud to the edge, effectively reducing latency and enabling real-time or near real-time data processing. One of the key driving forces behind the rise of edge computing is the explosive growth of the Internet of Things (IoT). IoT devices, embedded with sensors and connectivity features, generate massive volumes of data continuously. These devices often require low latency and prompt responses, making it impractical to rely solely on cloud-based infrastructures. Edge computing provides a decentralized approach that enables data to be processed locally on these devices or in nearby edge servers, ensuring quicker decision-making and enhancing overall system performance. Moreover, edge computing enhances data privacy and security. With sensitive information being processed and stored closer to the edge, there is a reduced need to transmit sensitive data over long distances or expose it to potential vulnerabilities in the cloud. This localized approach inherently reduces the attack surface and strengthens overall data protection. Additionally, edge computing enables data to be preprocessed and filtered at the edge, allowing organizations to aggregate and anonymize data before sending it to the cloud, further safeguarding privacy.

The HealthFog framework based on Edge Computing devices with deep learning . It can automatically analyze heart disease to provide lightweight fog or healthcare services and efficiently manage heart patients’ data from IoT devices. In blockchain and ABE techniques have been used to protect medical data. The CPABE technique has been used in to maintain the secure monitoring of healthcare data. In, IoT, cloud and edge-based healthcare systems with blockchain have been proposed to provide data security during monitoring. Homomorphic encryption based on mutual privacy-preserving using the K-means strategy ensures the protection between participants and the cluster centre. The authors in have proposed an IoT with a cloud-based healthcare system. It uses an IP-based multimedia service called IP Multimedia Subsystem (IMS) to monitor patients’ health conditions remotely. The Session Initiation Protocol (SIP) communicates with the IMS core and transmits data. This system can handle emergencies by implementing an alert system which makes calls and sends messages automatically in real-time. The sources of data are sensors, apps, and smartwatches.