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Integration Of 5G With Analytics and Artificial Intelligence

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ABSTRACT: The integration of 5G with analytics and artificial intelligence (AI) is a promising field that can revolutionize the way businesses operate, it provides high-speed, low-latency connectivity, which is essential for real time data processing and analytics. Integrating SDN, NFV, Artificial intelligence is a crucial for meeting industry needs and 5G requirements.

The 5G dataset usage are a Deep slice 5G dataset from was used to enhances 5G efficiency by predicting communication type. We describe the role of artificial intelligence and machine learning in 5G and beyond, to build cost-effective and adaptable performing next generation mobile network. The integration of 5G and man-made intelligence innovation will reshape the future instruction data climate by achieving incendiary mechanical progressions and instructive application situations. This will bring about a remade future instruction data climate. The 5G dataset are speed with the internet in the margin of some type of network it provides high-speed, low-latency connectivity, which is essential for real time data processing and analytics. AI, on the other hand, enables businesses to automate and optimize their operations, thereby increasing efficiency and reducing costs The combination of 5G, analytics, and AI in the retail sector can enhance the customer experience. Retailers can deliver quicker, more dependable connectivity in stores with 5G networks, allowing customers to conveniently browse product information and make purchases. Retailers may examine consumer data to determine preferences and customized the shopping experience by combining analytics with AI, which will enhance customer loyalty and sales. the bandwidth network are empty then by services have been developed in similar as virtual reality(VR), stoked reality(AR), etc.

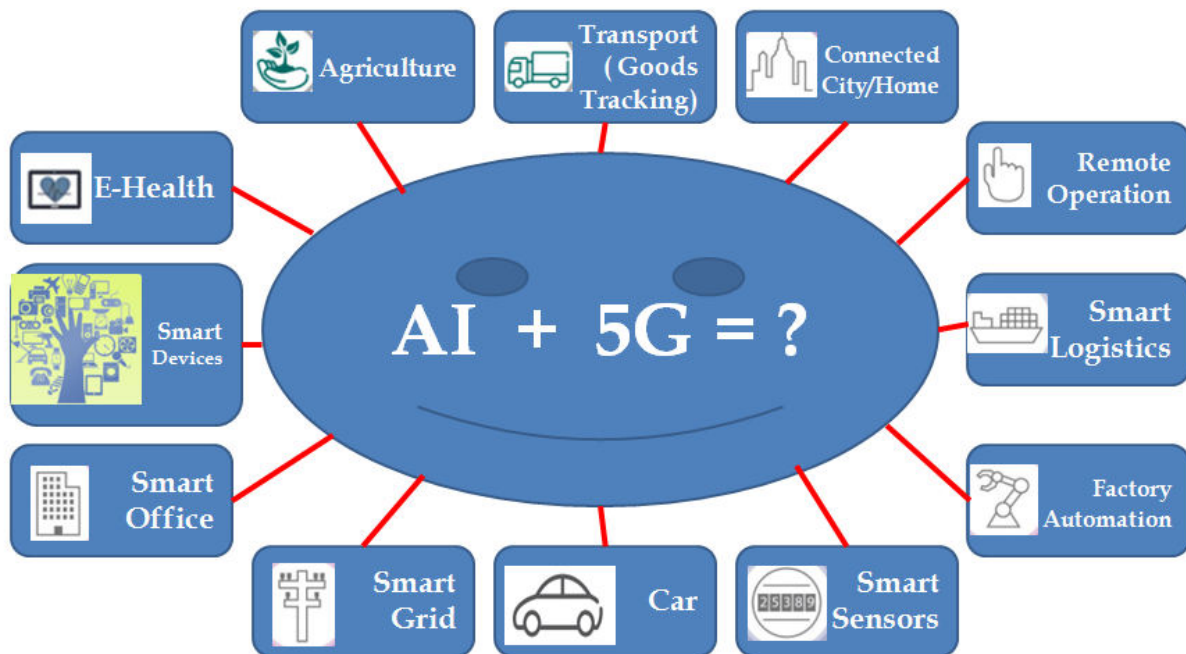
KEYWORDS:5G,Artificial intelligence, Network layer, Data analytics, Network control

I. INTRODUCTION

The introduction of 5G technology is drastically changing how businesses run. The integration of 5G with analytics and AI offers numerous benefits to businesses in different industries, including healthcare, transportation, and manufacturing. 5G has been introduce within the release 15 For Ubiquitous connectivity to the communicate with the network in businesses across industries, the combination of 5G, analytics, and artificial intelligence (AI) has the potential to open up a whole new world of opportunities. 5G networks can provide real-time production line monitoring in the manufacturing sector, enabling new technologies producers to identify and fix faults before they worsen. Businesses can use this data to find trends and patterns, anticipate equipment problems, and improve customized the security of protocols for different version of the 3gpp specification.

Real-time data processing and analysis can help companies make faster and more accurate decisions, automate processes to reduce costs, and provide personalized customer experiences. The combination of 5G, analytics, and AI in the retail sector can enhance the customer experience. Retailers can deliver quicker, more dependable connectivity in stores with 5G networks AI, analytics, and 5G have the ability to completely transform many facets of business. The 5G systems solved the major problems related to the capacity through use of new radio interface, massive MIMO, beamforming, high modulation orders, etc. Furthermore, 5G is planned to include a high level of flexibility to optimize o address these challenges, businesses need to invest in cybersecurity measures, train their employees in the use of these technologies,the network utilization by integrating software defined networking (SDN) and network function virtualization (NFV) technologies. Integration of 5G analytics involves incorporating data analytics techniques into 5G networks to optimize performance, Long Term Evolution The radio access network (RAN)belonging to the 4G is known as Policymakers also need to develop regulations that protect data privacy

enhance user experience, and enable efficient network management. The successful implementation of this technology requires a collaborative effort between policymakers and businesses. These insights can be used to improve network efficiency, predict and prevent network failures, enhance security, The massive deployment of LTE (Long Term Evolution) or 4G mobile network has solved one of the major challenges of wireless communications, which is high capacities, to build real broadband mobile Internet. and tailor services to meet the diverse needs of users. The Artificial intelligence mobile communication network are the network to be them in our overall networking fastest speed than 4G. integrating analytics into 5G networks is essential for maximizing the potential of this technology and delivering enhanced connectivity experiences.



NR has been standardized to allow tight interworking with LTE. Non standalone architecture allow a smooth and relation.

Main components of 5G in Artificial intelligence:-

1. Edge Computing: AI algorithms at the network edge enable real-time data
2. Network Slicing: AI facilitates the creation and management of network slices tailored to specific use cases, such as IoT or mission-critical applications.
3. Service Orchestration: AI automates service provisioning and management, streamlining operations and enhancing scalability.
4. Customer Experience: AI-driven analytics enhance customer experience by personalizing services, predicting user behavior, and resolving issues proactively.
5. Network Optimization: AI algorithms optimize network performance, ensuring efficient use of resources and enhancing user experience.
6. Predictive Maintenance: AI predicts equipment failures and optimizes maintenance schedules, reducing downtime and operational costs.
7. Security: AI-powered solutions detect and mitigate cybersecurity threats in real-time, safeguarding networks and user data.
8. Use case of 5G in AI

Autonomous Vehicles:

Using AI to analyze 5G data for real-time decision-making in autonomous vehicles, such as traffic prediction, route optimization, and collision avoidance. From taxi cabs to drones and beyond, 5G technology underpins most of the next-generation capabilities in autonomous vehicles.

Media and Entertainment:

Leveraging AI to analyze 5G data for personalized content recommendations, real-time video streaming optimizations. Outdoor venues, stadiums, and theme parks all face a considerable challenge when it comes to providing reliable network access.

Drone inspections:

Right now, one of the leading causes of employee injury is inspection of equipment or project sites in remote and potentially dangerous areas. Drones, connected via 5G networks, can safely monitor equipment and project sites and even take readings from hard-to-reach gauges.

Smart Cities:

Leveraging 5G data analysis in AI to improve traffic management Some cities already use 5G-enabled sensors to track traffic patterns in real time and adjust signals, helping guide the flow of traffic, minimize congestion and improve air quality.

Smart factories:-

5G, along with AI and ML, is poised to help factories become not only smarter but more automated, efficient and resilient. on a busy factory floor, drones and cameras connected to smart devices utilizing the IoT can help locate and transport something more efficiently than in the past and prevent.



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II. METHODOLOGY

The integration of 5G with analytics and AI is a topic that has gained significant attention in recent years due to its potential to transform several industries a methodology can enhance network optimization predictive maintenance and resource allocation real time insights for smarter decision making and improved user experiences. The integration of 5G with analytics and AI is a topic that has gained significant attention in recent years due to enhance various applications like IoT, edge computing, AR/VR, and autonomous systems its potential to transform several industries.

The 5G-ROUTES technical approach is based on a modular architecture in which the various 5G CAM technological enablers are integrated via open interfaces and APIs. It entails optimizing network architecture, protocols, and algorithms to harness the full potential of 5G technology for diverse use cases and industries. He integration of 5G with AI and analytics can help businesses make faster and more accurate decisions, automate processes to reduce costs, and provide personalized customer experiences. he existing literature on the integration of 5G with analytics and AI. We used several databases, including IEEE Xplore, ACM Digital Library, and ScienceDirect, to find relevant articles.

IV. CONCLUSION

Integration of 5G analytics into the Ai immense for optimizing network performance, enhancing user experiences, and enabling applications. After building 4G network, network operators offered real broadband mobile Internet with capacities up to 600 Mbps. 4G network works on capable to the middle With the increased speed and reliability of 5G networks, it will be possible to work from anywhere, at any time, with the same level of productivity as in the office.

The integration of 5G with analytics and AI presents significant benefits to businesses in different industries, such as healthcare, transportation, and manufacturing. However, challenges related to data privacy and security, potential job losses, and bi asin AI algorithms must also be addressed. 5G analytics and AI promises to drive the next wave of digital transformation, revolutionizing industries and empowering societies worldwide. In conclusion, the integration of 5G with analytics and AI presents an opportunity for businesses to revolutionize their operations.

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