

# The 5G Technology and Applications

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**Abstract:- Communication networks continue to improve with innovations emerging to ensure efficient and fast wireless communication. The latest innovation, fifth generation (5G) technology, since its unveiling, has demonstrated a revolution in the communications network with its high speed and guaranteed connectivity across mobile devices. Communication channels across the globe are shifting to 5G which is an improved version. This paper will discuss the 5G network and assess the major improvements compared to 4G.**

## I. INTRODUCTION

Modern technology has been one of the greatest inventions that have continued to benefit the global population in different sectors. In the communication sector, the development of wireless communication is considered one of the greatest achievements in technology. Many improvements have been made in the communication sector to ensure wireless communication is reliable and efficient. Mobile and wireless networks have been improved over the years to ensure users enjoy high-quality networks from communication service providers. Beginning with 1G wireless telecom connectivity. Mobile and wireless network providers have demonstrated tremendous progress in improving connectivity with the evolution from 1G to the latest innovation, 5G. The key concepts of 5G networks and their features depict a major transition in wireless communications considering the distinct improvements made.

## II. LITERATURE REVIEW

5G technology is an abbreviation of fifth-generation mobile technology and it is an improved version of 4G. Bhavika Patel (2017) noted that 5G technology changed the means to use cell phones with very high bandwidth while also allowing individuals to use worldwide cellular phones. The distinct features including offering quick response to subscriber tools, high-quality services based on policies to prevent errors, gigabit data broadcasting supporting over 65,000 connections, and high connectivity speeds of up to 25 Mbps (Mane, 2022), have made it an attractive network with service providers across the globe embracing it. The key concepts of 5G technology include (1) Internet Protocol version 6 (IPv6), (2) One Unified global standard, (3) a Real wireless world with no more limitations with access and zone issues, (4) Pervasive networks providing universal computing,

(5) Cognitive radio technology also known as smart radio, and (6) High altitude stratospheric platform station (HAPS) systems (Bhavika Patel, 2017). According to Meer Zafarullah Noohani et al. (2020), the current 5G structure indicates a decrease in energy utilization by 10 percent compared to the 4G systems. This includes a reduction in the power requirements of wireless base station antennae and devices including smartphones, IoT devices, and tablets thus broadening battery life (Meer Zafarullah Noohani et al., 2020).

## III. APPLICATION OF 5G TECHNOLOGY

According to Mane (2022), 5G technology can be applied in: -

- Smart mobility in terms of developing autonomous driving services, traffic balance, and accident prevention.
- Smart grid networking is consumption-saving in homes and commercial buildings.
- Smart health in terms of mobile-based monitoring and diagnosis.

## IV. CONCLUSION

The evolution to 5G technology is an indication that technology continues to be challenged by innovations that improve the quality of service provided to individuals across the globe. Its key features and concepts depict a major transition to quality wireless communication and utilization in different sectors.

## REFERENCES

- [1]. Bhavika Patel, M. P. (2017). Introduction About 5G Mobile Technology. *International Journal of Engineering Research & Technology*, 879-883.
- [2]. Mane, S. (2022). 5G Communications & Networks. *International Journal of All Research Education and Scientific Methods*, 261-268.
- [3]. Meer Zafarullah Noohani, K. U. (2020). A Review of 5G Technology: Architecture, Security and Wide Applications. *International Research Journal of Engineering and Technology*, 1-34.