Emerging Trends And Innovative Approaches In 6G Networks

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Introduction

With the emergence of 5G network technology, data transfer rate has been increased 10 times than the rate with 4G networks. Many telecom companies and enterprises such as Nokia Bell Labs and Samsung are working to develop and implement 6G by around 2030. The advent of 5G networks has paved the way for many modern applications [3]. However, 5G still cannot fulfill the needs of future technological developments that require even faster networks, real time uninterrupted communication and data transfer rates.

This can be understood with the help of self-driving cars [1]. In the coming future, it is inevitable that person-driven cars will be replaced by self-driven cars. The communication between cars on road will be essential to avoid collisions. But if the communication gets interrupted even for a second on a high-speed congested route, it can result in accidents. This can be prevented using 6G which is fast, low latency and satellite integrated network. Furthermore, the incursion of augmented reality (AR) in a person's day to day life would require real time connection to the world.

6G is roughly 100 times faster (1Tbps) than predecessing 5G network (100Gbps). End to end latency in 6G (1ms) is 10 times shorter than 5G (10ms). Moreover, the connectivity 6G mobile networks can be leveraged underwater and in the space. The advent of 6G communication technology will be helpful in healthcare as to establish electronic healthcare and remote surgeries [2].

Some key areas of innovation are listed below –

1) Tera Hertz communication
2) AI driven networks
3) Quantum computation
4) Extended reality
5) Brain computer interface
6) Automation

Adhering to recent development in technology, smartphones currently come equipped with sensors such as microphone, gyroscope, accelerometer and other such. This resulted in billions of people to share sensory data which further assisted the development of applications which

uses this sensory data to offer real time services. Nevertheless, applications using sensory data on a city level scale would require fast connectivity. Therefore, 6G will make use of sensing, networking and computational technology to enable smart city applications. Some of these applications such as environmental monitoring, traffic congestion detection, hot spot identification, and public information sharing will make use of 6G [4].

Conclusion

As long as technological advancements are being progressing, the need for innovative and practical approaches to further improve the network system would arise. The upcoming 6G technology is bound to make future technological advancements possible.
The new era of 6G network will pave the way for certain new technologies such as quantum cryptography, brain chips and automated systems to be included in day to day life of humankind.

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