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Investigating wireless connectivity: developments in 6G technology

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Abstract:

Wireless communication involves the transmission of data between two or more points without physical connections. Mobile wireless communication has been in use for many years, and with the increasing need for mobile services, successive iterations of network technology have been introduced over time. These distances can vary from short, such as those used for television remote control, to far-reaching distances used in deep-space radio communications. A wireless network enables devices to maintain connectivity without the need for physical cables, allowing them to move freely. Access points amplify Wi-Fi signals, extending the network's reach so that devices can remain connected even when distant from the router. The goal of wireless technology is to deliver high-quality, dependable communication, with each new generation of services marking significant advancements in this pursuit. From the early stages of 1G to the current 5G network technology, we've witnessed remarkable progress. However, while many countries are adopting 5G, only a few are actively developing the next generation: 6G. The latest iteration is 5G, although it's currently only adopted by select countries. 5G is a robust and high-speed wireless communication network that largely meets users' requirements. However, the quest for enhanced capabilities persists. The 6G technology will be much faster than the previous generations. This paper explores the evolution of technologies, their benefits, and the fulfillment of user demands with the introduction of the next generation of mobile networks: 6G and even beyond, envisioning the future with 7G.

Keywords:

5G, 6G, Handoff, Time Division Multiple Access, Code Division Multiple Access, GSM, smart antenna.