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A Note on 5G Networks for Visible Light Communication

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Introduction

In terms of device classes, deployment conditions, and mobility levels, future wireless networks must contend with a significant degree of heterogeneity. A promising strategy for revolutionising future networks is the coexistence of wireless technologies. In order to enable indoor traffic off-loading from LTE-cells, radio-frequency (RF) based WiFi access points have already been taken into consideration. Optical wireless technologies, such visible light communications (VLC), provide an alternative to radio frequency (RF). A developing technology called VLC offers high-quality illumination and data transmission by using, for instance, the current interior lighting infrastructure. The technique has the ability to increase capacity while also offering an alluring alternative to off-loading data from current RF networks. In this webinar, we concentrate on outlining VLC's potential and showcasing various. These days, the emergence of machine-type communication networks and the Internet of Things (IoT) has imposed additional demands for more wireless network capacity. The development of the fifth-generation (5G) and sixth-generation (6G) wireless communication networks is heavily influenced by these difficulties. In order to increase data rate and system capacity in 5G/6G networks, Visible Light Communication (VLC) is therefore viewed as a viable technology. The vast yet underutilised VLC spectrum spans the frequency range of 430 THz to 790 THz [1].

Description

Meanwhile, walls and other obstructions hardly allow visible light to pass through. Thus, the amount of spatial reuse and the security of sensitive data can both be increased while the interference between Light-Emitting Diode (LED) communication cells can be significantly reduced. VLC systems can be used in a variety of settings in both companies and households thanks to these benefits. When compared to conventional incandescent or fluorescent lights, LEDs have a longer lifespan and use less energy. Highly energy-efficient LEDs can be found for lighting, mobile communication, localisation, and other uses as a result of the significant advancements made in solid-state technologies. Researchers from academia and business are collaborating on this study topic to examine the creation, deployment, and use of visible light communication systems in 5G and 6G networks [2].

Visible light communication is receiving a lot of attention as a potential access method for 5G wireless communications. VLC has advantages in terms of energy economy and extremely wide bandwidth [3], but it also has limitations in terms of transmission range and transmission path obstructions. This article attempts to offer a comprehensive analysis of the most recent developments in VLC research, which can be used to 5G wireless communication systems. In compared to RF-based communications, this paper shows the benefits and drawbacks of VLC, particularly in terms of spectrum, spatial reuse, security, and energy efficiency. The essay also looks into other lighting options suggested for VLC systems. The two categories of fixed and mobile VLC communications are used to categorise the literature on VLC networking [4,5].

Conclusion

Visible light communication (VLC), a novel approach that blends illumination and optical communication, offers enormous business potential. It not only complies with the national strategy for energy efficiency and emissions reduction, but it also supports the creation and technological advancement of access networks and next-generation lighting. Likewise, as light emitting diode (LED) technology has advanced, LED has found widespread use in a variety of industries, including lighting, TV and backlight board screens, displays, etc. Because LEDs have a substantially longer lifespan than conventional incandescent and fluorescent light bulbs, they are also significantly more energy efficient, have a greater performance to cost ratio, and can switch on very quickly. This makes VLC one of the hottest subjects in worldwide competition. Visible light communication is receiving a lot of attention as a potential access method for 5G wireless communications. VLC has advantages in terms of energy economy and extremely wide bandwidth, but it also has limitations in terms of transmission range and transmission path obstructions. This article attempts to offer a comprehensive analysis of the most recent developments in VLC research, which can be used to 5G wireless communication systems. In compared to RF-based communications, this paper shows the benefits and drawbacks of VLC, particularly in terms of spectrum, spatial reuse, security, and energy efficiency. The essay also looks into other lighting options suggested for VLC systems. The two categories of fixed and mobile VLC communications are used to categorise the literature on VLC networking.

References

1. Napoli, Giuseppe and Maria Gabriella Xibilia. "Soft Sensor design for a Topping process in the case of small datasets." *Comp Chemical Eng* 35 (2011): 2447-2456.
2. Saptoro, Agus. "State of the art in the development of adaptive soft sensors based on just-in-time models." *Procedia Chem* 9 (2014): 226-234.
3. Nasralla, Moustafa M. "Defenses against perception-layer attacks on iot smart furniture for impaired people." *IEEE Access* 8 (2020): 119795-119805.
4. Syed, Naeem Firdous. "Denial of service attack detection through machine learning for the IoT." *J Infor Telecom* 4 (2020): 482-503.
5. Zhou, Zheng. "Potential risk of IoT device supporting IR remote control." *Comput Net* 148 (2019): 307-317.

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