Coexistence of WiFi and LiFi toward 5G: Concepts, Opportunities, and Challenges

Smart phones, tablets, and the rise of the Internet of Things are driving an insatiable demand for wireless capacity. This demand requires networking and Internet infrastructures to evolve to meet the needs of current and future multimedia applications. Wireless HetNets will play an important role toward the goal of using a diverse spectrum to provide high quality-of-service, especially in indoor environments where most data are consumed. An additional tier in the wireless HetNets concept is envisioned using indoor gigabit small-cells to offer additional wireless capacity where it is needed the most. The use of light as a new mobile access medium is considered promising. In this article, we describe the general characteristics of WiFi and VLC (or LiFi) and demonstrate a practical framework for both technologies to coexist. We explore the existing research activity in this area and articulate current and future research challenges based on our experience in building a proof-of-concept prototype VLC HetNet.