Visible light positioning: principle and applications

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Abstract :

Visible light communication (VLC) exploits the optical spectrum and its envisioned high-speed, low-latency wireless technology supports the vision of sixth generation (6G) networks. Beyond data transmission, the same LEDs and infrastructure enable visible light positioning (VLP), a secure, and centimeter-accurate positioning technology suitable for a wide range of applications in smart industry, logistics, healthcare, and more. Recent advances—such as positioning using unmodulated LEDs (uVLP)—further broaden the potential of light-based systems by using available light sources without any alterations. This talk will shed some light on the motivation for using visible light as a positioning means. It will provide an overview of the components and the underlying principles of VLP and will introduce some common approaches for deriving receiver positions based on the measured light signal. The talk will include recent experimental research results to illustrate benefits and challenges of positioning through visible light and shed some light on promising research directions.

Biography

DAVID PLETS (Senior Member, IEEE) has been a member of the imec-WAVES Group, Department of Information Technology, Ghent University since 2006. He obtained his PhD in electrotechnical engineering in 2011, with a dissertation on the characterization and optimization of the coverage of digital wireless broadcast and WLAN networks. He became a professor in the same group in 2016. His current research interests include localization techniques and the IoT, for both industry-and health-related applications. He is also involved in the optimization of wireless communication and broadcast networks and their exposure, and on IoT-based animal health and welfare monitoring algorithms. He is active in fundamental research projects as well as in collaboration projects with industrial partners, aiming to transfer research results to industrial applications. David Plets has been associate editor of IEEE Sensors Journals since 2024 and has published over 100 scientific journal articles and over 150 conference articles.