Special Issue

Recent Trends/Applications in Ultra-Wideband (UWB) Sensing, Localization and Communications

Message from the Guest Editors

Ultra-Wideband (UWB) has emerged as a powerful tool for precise indoor positioning, asset tracking, environmental monitoring, and autonomous systems due to its high time resolution, large bandwidth, and low power consumption. Meanwhile, with the development of commercial chips, the UWB ecosystem has gradually been established, encompassing applications in widely used smartphones, smart homes, automobiles, etc. However, UWB systems face challenges such as multi-path interference, signal attenuation, and difficulty in clock synchronization, which can degrade localization accuracy and reliability. To overcome these challenges, advanced signal processing techniques, multi-sensor fusion, and machine learning algorithms are being developed to improve system performance. Furthermore, the integration of UWB with emerging technologies like IoT and AI is opening new avenues for enhanced, scalable sensing and localization capabilities across diverse fields, including smart cities, healthcare, and autonomous vehicles. This Special Issue showcases novel advancements in UWB signal applications, highlighting both recent methodological developments and practical results.

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Sensors is a leading journal devoted to fast publication of the latest achievements of technological developments and scientific research in the huge area of physical, chemical and biochemical sensors, including remote sensing and sensor networks. Both experimental and theoretical papers are published, including all aspects of sensor design, technology, proof of concept and application. Sensors organizes Special Issues devoted to specific sensing areas and applications each year.

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