Robin Augustine

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Robin received Master's degree in Electronics (Robotics) from Cochin University of Science and Technology, India, in 2005. He received Doctoral degree in Electronics and Optic Systems from Université Paris Est Marne La Vallée, Paris France 2009. He had been post-Doctoral researcher at IETR, Rennes, France until 2011. He joined Uppsala University as senior researcher in 2011. He is now Associate Professor in Medical Engineering at Uppsala University. His research field includes wearable antennas, microwave phantoms, dielectric characterization, Bionics, mechatronics, Non-invasive Diagnostics, clinical trials, animal trials, in and on body microwave communication. He has pioneered the Fat – Intra Body Communication technique and has authored or coauthored more than 200 conference and journal articles.

Robin is the founder, chairman and CTO of the Swedish medtech company Probingon AB. He is currently coordinating EU HORIZON 2020 FET-Open B-CRATOS and involved in several other European large-scale projects.

Abstract

Intrabody communication (IBC) has emerged as a transformative approach within the landscape of body area networks (BAN) and body sensor networks (BSN), facilitating the wireless transmission of data within the human body. This seminar will delve into ground-breaking research presented in an IEEE Transactions on Biomedical Engineering article, which explores a novel application of low-cost WLAN hardware for Fat-Intrabody Communication (Fat-IBC). The study demonstrates a 92 Mb/s data transmission rate using WLAN components, a significant enhancement in intrabody communication speed, achieved with cost-effective technology. Attendees will gain insights into the innovative methodologies employed, including the use of phantoms and specific antenna measurements, to optimize the performance of Fat-IBC. Key metrics such as bit error rate (BER) and signal-to-noise ratio (SNR) will be analysed, highlighting their implications for practical applications. This seminar will also address the various factors influencing Fat-IBC, such as the role of human skin, fat tissue, and the coupling between antennas, to ensure robust and efficient wireless communication. The discussion will extend to the potential impact of this technology on the future development of wearable and implantable medical devices, providing a comprehensive overview of the state-of-the-art in intrabody communication. Join us to explore how this cutting-edge research paves the way for advancements in biomedical engineering and personal health monitoring systems.