WSNs for Detection and Localization

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Recently, Wireless Sensor Networks (WSNs) became crucial in monitoring applications. The talk presents an Implementation of Particle Filter (PF) based algorithm in Xilinx FPGA for radioactive source localization using WSN. The architecture is a two-step sequential PF machine, where particle generation, weight calculation and normalization are carried out in parallel during the first step followed by a sequential or parallelized resampling in the second step. This architecture targets a balance between hardware resources and speed of operation. Also, a WSN with machine learning detection and localization algorithm will be presented.

Biography of Prof. Imbaby I. Mahmoud

Imbaby I. Mahmoud received a Dr. Eng degree in ECE from Waseda University, Tokyo, Japan, in March 1994 through a Japanese Government Doctorate Scholarship. In 1983, he was appointed as demonstrator at the Egyptian Atomic Energy Authority (EAEA), Cairo, Egypt. He became a professor at the same authority in February 2006 and served as Head of Eng. Dept. in June 2009, Vice Chair for scientific affairs for Material Division in Oct. 2010 and Chair of the division in 2013. He served as Chair of the Nuclear Research Center in 2017. He visited Lisbon University, Portugal, 1987 and KFKI, Budapest, Hungary 1998. He received nuclear engineering young scientist prize from Egyptian Society for Nuclear Sciences and Applications (ESNSA) and Atomic Energy Authority in 1996, He was a recipient of ICTP (Trieste, Italy) regular associate award in January 2002. He was a member of IEICE from 1990 to 1994 - Japan, IEEE (Computer society affiliate) -1994 – USA, ESNSA and senior member of URSI. He is a member of National Radio Science Committee – URSI and Energy Research Council (both of Egyptian Academy of Scientific Research and Technology). He was CSI/PI of several IAEA CRPs and ASRT-JINR projects. His research interests include digital nuclear instruments design, modelling and simulation in devices, circuits and systems, nuclear reactor instrumentation and control, computer networking, VLSI design and algorithms. Email: imbabyisma@yahoo.com