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Impact of Brooks-Iyengar distributed sensor network algorithm for the next decade

Brooks–Iyengar algorithm is a seminal work and a major milestone in distributed sensing, and could be used as a fault tolerant solution for many redundancy scenarios. Also, it is easy to implement and embed in any networking systems. In 1996, the algorithm was used in MINIX to provide more accuracy and precision, which leads to the development of the first version of RT-Linux. In 2000, the algorithm was also central to the DARPA SensIT program's distributed tracking program. Acoustic, seismic and motion detection readings from multiple sensors are combined and fed into a distributed tracking system. Besides, it was used to combine heterogeneous sensor feeds in the application fielded by BBN Technologies, BAE systems, Penn State Applied Research Lab (ARL), and USC/ISI. Besides, the Thales Group, UK defense manufacturer, used this work in its Global Operational Analysis Laboratory. It is applied to Raytheon's programs where many systems need extract reliable data from unreliable sensor network; this exempts the increasing investment in improving sensor reliability. Also, the research in developing this algorithm results in the tools used by the US Navy in its maritime domain awareness software. In education, Brooks–Iyengar algorithm has been widely used in teaching classes such as University of Wisconsin, Purdue, Georgia Tech, Clemson University, University of Maryland, etc. In addition to the area of sensor network, other fields such as time-triggered architecture, safety of cyber-physical systems, data fusion, robot convergence, high-performance computing, software/hardware reliability, ensemble learning in artificial intelligence systems could also benefit from Brooks–Iyengar algorithm.

Biography

S S Iyengar is a Distinguished Ryder Professor and Director of the School of Computing and Information Sciences at Florida International University and is the founding Director of the FIU-Discovery Lab. He is a pioneer in the field of distributed sensor networks/sensor fusion, computational aspects of robotics and high performance computing. He has published over 500 research papers and has authored/co-authored/edited 20 books published by MIT Press, John Wiley & Sons, Prentice Hall, CRC Press, Springer Verlag, etc. These publications have been used in major universities all over the world. His research publications are on the design and analysis of efficient algorithms, parallel computing, sensor networks, and robotics. He is the member of the European Academy of Sciences, fellow of IEEE, ACM, AAAS, NAI and Society of Design and Process Program (SPDS). He was awarded a Distinguished Alumnus Award of the Indian Institute of Science, Bangalore and the IEEE Computer Society Technical Achievement for the contributions to sensor fusion algorithms and parallel algorithms.

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