Raytheon

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April 23, 2013

The Raytheon BBN Web Site states "Each Raytheon BBN Technologies breakthrough can have a massive impact on the way we live — a powerful motivator for both customers and employees." This is true of the Brooks-Iyengar Algorithm[1]:

> "The algorithm referred to as the Brooks-Iyengar algorithm or the Brooks-Iyengar hybrid algorithm is a distributed algorithm that improves both the precision and accuracy of the measurements taken by a distributed sensor network, even in the presence of faulty sensors,"

In 2002, Raytheon BBN was the Integration and Test Team lead for DARPA's Sensor Information Technology (SensIT) program under DARPA PM Dr. Sri Kumar. To meet DARPA's goal of developing technology for distributed sensor processing, Raytheon BBN designed a sensor network architecture for which other SensIT participants developed components. A Penn State Applied Research Laboratory (ARL) team led by Dr. Richard Brooks developed and demonstrated the Brooks-Iyengar algorithm as a "collaborative application" in the Reactive Sensor Nets (RSN) instance on the SensIT software architecture that integrated the Brooks-Iyengar algorithm with other work from University of Southern California Information Sciences Institute (USC/181), BAE Systems, Fantastic data, the University of Maryland, and others. This work was demonstrated at the Marine Corps Air Ground Combat Center, Twentynine Palms, California, and in a test network set up at BBN's (formerly GTE) Waltham, Massachusetts laboratory. This was Raytheon's initial experience with the Brooks-Iyengar algorithm in a realistic setting[2].

Since then, the impact of this work has been significant. The Brooks-Iyengar Algorithm makes it possible to extract reliable data from sensor networks when some sensors are unreliable, thus adding a fault tolerant aspect. Unreliable sensor data are typically the case in systems that Raytheon develops for its customers, so application of the algorithm made Raytheon and its customers more successful without increased investment in improved sensor reliability. This saved money, always important in today's increasingly budget conscious environment.

In summary, the Brooks-Iyengar algorithm continues to have significant impact where it is applied to Raytheon's programs.

[1] Vijay Kumar, "Impact of Brooks-Iyengar Distributed Sensing Algorithm on Real Time Systems", accepted for publication in IEEE Transactions on Parallel and Distributed Systems

[2] Gail Mitchell, Jeff Mazurek, Ken Theriault, and Prakash Manghwani, "SenScft Development of a Collaborative Sensor Network", chapter 52 in Distributed Sensor Networks edited by S. Sitharama Iyengar and Richard R. Brooks, Chapman and Hall/CRC 2004