Dr. Srini Ramaswamy

Global Project Manager
Symphony Plus Engineering for the Power Generation Business
ABB

Internet of Things in Industrial Automation Systems: Computing Implications

Abstract: Much of our current day problems with automation software systems can be attributed to the inherent flexibility that users' actively seek in software-driven automation control systems. Often, problems arise as these systems are not effectively designed and tested to coexist with other complex systems, including humans, that generate vast and dynamic information elements. Expectations from Automation however include a high degree of flexibility with complex embedded software elements for data acquisition, coordination and monitoring; while actively assisting the human with 'correct' decision-making. Issues include assembling, integrating and analyzing information from disparate sources in a timely, accurate and reliable manner, while meeting real-time needs. Future automation systems, in spite of such greater and wider automation, will retain the human element in the decision making loop for reflexive decision making skills that impact safety and security. These humans will be required to have a higher degree of understanding of basic engineering and scientific issues, exhibit critical decision making skills and possess keen reflexes (perception and observation skills) to observe and react to impending changes in the emergent scenarios. Future automation industry professionals are expected to have increased cross-disciplinary knowledge, understand and deal with the increasingly dominant role of technology, as well as operate effectively in an increasingly multi-cultural and multi-ethnic, global work environment. In this talk, I will outline and summarize some of the challenges, risks and opportunities that lie ahead for such professionals, specifically from a computing perspective, while enabling ubiquity in embedding derived intelligence within our engineering automation systems.

Brief Biography: Dr. Srini Ramaswamy currently serves as the Global Project Manager for the Symphony Plus Engineering for the Power Generation business unit and a member of its global technology organization. Earlier he served the Global lead for Software Tools Development and Services for the Software Development Improvement Program (SDIP) at ABB, headed the Industrial Software Systems research group at its India Corporate Research Center (CRC), and headed the Tools and Support Services group for its India Development Center (IDC) in Bangalore, India. On the academic front, he serves as a visiting professor at the Univ. of Arkansas at Little Rock and an honorary adjunct professor at the International Institute of Information Technology – Bangalore. Additionally, he serves as the Associate Director for the Australia-India Center for Automation Software Engineering, a $3M 3-way Industry – University – Government partnership focused on software systems research. His research interests are on systems engineering, intelligent and flexible control, behavior modeling, analysis and simulation, empirical software systems research, software stability and scalability; particularly in the design and development of complex software systems. Before embarking on a corporate career, he was in US academia for 16 years, which included several invited visiting appointments: at INSA de Rouen, France (four times), at the Institute of Software Integrated Systems (ISIS) at Vanderbilt University (thrice), and at the University of Texas at Austin (thrice).

Dr. Ramaswamy has over 200 publications including 150+ peer reviewed publications (35+ journals), 45+ selected reviews on ACM Computing Surveys, 4 book chapters and 5 patent filings. Dr. Ramaswamy has actively advised and participated in 12 PhD dissertations (USA: 7, France: 3, India: 2) and 50+ M.S student works in Computer Science, Applied Sciences, Electrical and Computer Engineering, Industrial and Manufacturing Engineering and Information Systems. He has a Ph.D. degree in Computer Science from the University of Louisiana at Lafayette.

On the professional front, Dr. Ramaswamy serves as a Vice-chair in IEEE Computer Society India Council, ExCom committee member of the IEEE Bangalore Chapter, IEEE Computer Society alternate representative director to the Computing Sciences Accreditation Board. He is a commissioner in the CAC commission of ABET and serves on its ExCom. He is a Senior member of the IEEE and ACM, and a life member of the India Science Congress Association. He also served as an active volunteer for the IEEE CS Educational Activities board's http://trycompting.org website. He is an active member of IEEE SMCS Technical Committee on Distributed Intelligent Systems and served as an Associate Editor (2008-2012) for the IEEE Transactions on Systems, Man and Cybernetics, Part C: Applications and Reviews.