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Suresh Sundaram

Nanyang Technological University

Sundaram Suresh is an Associate Professor with School of Computer Science and Engineering at Nanyang Technological University, Singapore. In the field of Data Analytics and Automation, he plays an important role as Cluster Director at ERI@N and Deputy Director at Robotic Research Center. His research interests are in Computational Cognitive Analytics, Intelligent Control and Automation. He closely works with many SME's on data analytics and robotic automation for industrial problems. Prior to joining NTU, Suresh was an Assistant Professor at Indian Institute of Technology - Delhi during 2008-2009. For a short-period, he was with Korea University as a faculty in Industrial Engineering department. From 2007-2008, he was selected as a ERCIM research fellow and spent valuable time in the project team PULSAR at INRIA Sophia-Antipolis, France. He received post-doctoral training under the guidance of Prof. N. Sundararajan at School of Electrical Engineering, Nanyang Technological University, Singapore, from 2005-2007. He received Masters (1999-2001) and Ph.D. (2001 - 2005) degree from Department of Aerospace Engineering, Indian Institute of Science, Bangalore India. He published more than 200 journals and conference papers and a book on complex-valued neural network. He served in various committees in IEEE Computational Intelligence Society, Singapore. He was a general chair for IEEE SSCI 2018 and co-chair for IEEE CISDA. He also served as a Publication Chair in IEEE SSCI 2013.

KEYNOTE SPEECH

INTELLIGENT INTEGRATED DECISION CONTROL APPROACH FOR COOPERATIVE MULTI-ROBOTIC SYSTEM

Abstract: This talk considers the problem of autonomous multi-robotic cooperative target search in an unknown environment using a decentralised framework. Further, communication between robots is difficult in an uncertain environment. The no-communication scenario translates as the robot do not exchange either the information about the environment or their actions among themselves. The conventional decision control system decouple the decision making process from control of the robot dynamics and this may leads to difficulty in executing the decision. The talk present an integrated decision and control theoretic solution for a search problem which generates feasible robotic trajectories. In particular, a perception based algorithm is which allows a robot to estimate the probable strategies of other robots' and to choose a decision based on such estimation. The algorithm shows robustness with respect to the estimation accuracy to a certain degree. Finally, the experimental validation of IDC with perception algorithm on multi-UAV search problem and convoy protection problem shows the robustness under real environment.