

Notice and Invitation

Oral Defense of Doctoral Dissertation
The Volgenau School of Engineering, George Mason University

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Bachelor of Science, Southern Illinois University, 2014
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Communication Aware Robotic Sensor Deployment

Friday, February 14, 2020, 11:00 AM
ENGR 1602
All are invited to attend

Committee

Dr. Cameron Nowzari, Chair
Dr. Abbas Zaidi
Dr. Damoon Soudbakhsh
Dr. Feitian Zhang

Abstract

Wireless sensor networks (WSN's) have been receiving a lot of interest in the last two decades due to the variety of applications that can benefit from them. As the interest in WSN's grows, addressing the physical constraints of these networks has become extremely important to ensure their reliability and efficiency. It was noted in the US Military challenge in 2016 that the wireless networks were already overcrowded and by 2030 the demands on wireless networks will be 250 times greater. Taking this into account, reducing the amount of messages exchanged (communication) between the sensors in the network while maintaining an adequate level of performance has become a critical task, and this will be the focus of this dissertation.

A trivial solution which can reduce the amount of communication over a wireless network is by using a periodic communication model and specifying a long enough communication period. In spite of this, this solution may not ensure the level of performance desired. For a WSN to do its job the controller must have sufficient information to be updated. This requires finding a communication strategy for the sensors to exchange messages and find the conditions for the controllers to be updated. This PhD work addresses this problem for different deployment approaches.