Abstract

Wireless Multimedia Sensor Network (WMSN) is an extension of Wireless Sensor Network (WSN), where in addition to scalar sensors camera sensors are present. In wireless multimedia sensor networks (WMSNs), a high cost of processing and communicating the multimedia data is required. So it is critical to reduce possible data redundancy. Data redundancy occurs due to overlapping of Field of view (FOV) of camera sensors. Data redundancy affects on the communication cost in terms of bandwidth used, CPU processing etc. increases. Therefore, camera sensors should only be actuated when an event is detected within their vicinity. The scalar sensors first detect the occurrence of an event in the region of interest. Then the scalar sensors reports their corresponding camera sensors regarding the occurrence of event. In this paper, a distributed actuation scheme is proposed which depends to activate the least number of cameras while still preserving the necessary event coverage to avoid possible redundancy in the multimedia data. Even though the camera sensors have heard from scalar sensors about an occurring event, they may not cover the event. These nodes unnecessarily undergo distributed camera actuation scheme and some or all of them are
activated. So our objective is to keep such cameras in turned off condition and to activate optimum number of camera sensors while preserving the necessary event coverage. The basic idea of this scheme is the collaboration of camera sensors that have heard from scalar sensors about an occurring event to minimize the possible coverage overlaps and also their FoVs intersect with the event region. This paper also proposes distributed actuation schemes for monitoring the event boundary. Simulation are presented to show the performance of our and other work in terms of coverage ratio, and the number of activated camera sensors under several random deployment schemes.

References


Index Terms

Computer Science Wireless
Keywords

Wireless Multimedia Sensor Network (WMSN), boundary node, event detection, camera actuation, Field of View (FoV), redundancy, scalar sensors