| Title | Centroidal voronoi tessellation based energy efficient clustering protocol for heterogeneous wireless sensor and robot networks |
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| Published Journal Name | 2014 17th International Conference on Computer and Information Technology (ICCIT) |
| Type of Publication | Conference Paper |
| Volume |  | Issue |  |
| Publisher | IEEE |
| Publication Date |  2014/12/22 |
| ISSN |  |
| DOI | [10.1109/ICCITechn.2014.7073074](https://doi.org/10.1109/ICCITechn.2014.7073074) |
| URL |  |
| Other Related Info. |  |
|  |
| Abstract |  |
| In this paper, we propose a novel clustering protocol for wireless sensor and robot networks (WSRN) to ensure efficient energy usage and maintain maximum connectivity among the sensors. Our algorithm mainly works in two phases: (i) creates optimal number of clusters in the region of interest via three-point centroidal voronoi diagram. (ii) aggregates data from the members of each cluster and transfers to base station. This protocol is designed using double layered adaptive clustering and unknown region exploration which can be changed when needed for specific application. Additionally, this protocol works without the prior knowledge of the deployment region. We compared the results with LEACH and LEACH-C as a proof of concept. Specifically, simulation results exploit higher level of performance improvement in terms of energy dissipation, node failure, transmission overhead, and data aggregation among large number of mobile sensors. Finally, we analyzed the protocol with different settings which manifest the viability of our design. |