

Doctoral Thesis by Reinholds Zviedris

Object monitoring using low-power embedded devices and heterogenous wireless sensor networks

Abstract

Wireless sensor networks have become an integral part of the ubiquitous computing and the Internet of Things. During research has been developed and described general method for creating embedded sensor equipment. By applying it one can create tools for object monitoring and data collection using low-power embedded sensor equipment and heterogeneous wireless sensor networks. In the course of work the method was applied to create the tool package suitable for monitoring and determination of activities of wild animals, i.e., Eurasian lynxes (*Lynx lynx*) or Eurasian grey wolves (*Canis lupus lupus*). Some of work's hypotheses are evaluated and results are categorized by applying them to track participants of car orienteering events. As well some assumptions of research are evaluated based on data collection and exchange in monitoring of sites of future renewable energy plants. The results achieved by creating various usage embedded sensor devices shows that general method described in thesis is applicable.

Keywords

Wireless Sensor Networks, Object Monitoring, Wild Animals, Network Communication, Delay and Disruption Tolerant Networking.