

Enhancing Routing Energy Efficiency of Wireless Sensor Networks

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Abstract—Nowadays Wireless Sensor Networks WSNs are playing a vital role in several application areas ranging health to battle field. Wireless sensor networks are easy to deploy due to its unique characteristics of size and self-organizing networks. Wireless sensor nodes contain small unchangeable and not chargeable batteries. It is a resource constraint type network. Routing in WSN is most expensive task as it utilizes more power resources. This paper is intended to introduce energy efficient routing protocol, known as Position Responsive Routing Protocol (PRRP) to enhance energy efficiency of WSN. Position responsive routing protocol differs in several ways than other existing routing techniques. Position response routing protocol approach allows fair distribution of gateway\cluster head selection, maximum possible distance minimization among nodes and gateways\cluster heads to utilize less energy. Position responsive routing protocol shows significant improvement of 45% in energy efficiency of wireless sensor network life time as a whole by increasing battery life of individual nodes. Furthermore PRRP shows drastic increases for data throughput and provide better solution to routing energy hole due to it fair distributed approach of gateway selection. This work is the extension of Energy efficient routing protocol for wireless sensor network published in IEEE ICACT 2014.

Keyword—Routing protocol CELRP, Energy Efficient, WSN, PRRP position responsive routing protocol, Routing protocol



Noor Zaman acquired his Degree in Engineering in 1998, and Master's in Computer Science at the University of Agriculture in Faisalabad in 2000. His academic achievements further extended with a PhD in Information Technology at UTP, University Technology Malaysia. He has vast experience of 14 years in the field of teaching and research. He is currently working as a Faculty member in the College of Computer Science and IT, King Faisal University, in Saudi Arabia. He has contributed well in King Faisal University for achieving ABET Accreditation, by working as member and Secretary for Accreditation and Quality cell for more than 6 years. He takes care of versatile operations including teaching, research activities, leading ERP projects and IT management. He headed the Department of IT, and administered the prometric center in the Institute of Business and Technology (BIZTEK), in Karachi Pakistan. He has worked as a consultant for Network and Server Management remotely in Apex Canada USA base Software house and call center.

Noor Zaman has authored several research papers, and edited four international reputed books, has many publications to his credit. He is an associate Editor, Regional Editor and reviewer for reputed international journals and conferences around the world. He has completed several research grants and currently involved with funded projects in different courtiers. His areas of interest include Wireless Sensor Network (WSN), Network, Artificial Intelligence, Telecommunication, Mobile Computing, Software Engineering, Unix, and Linux.



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Turki Alghamdi graduated with B.Sc. degree (with honors) in computer science from the King Abdulaziz University, Jeddah, Saudi Arabia, in 2003. He was awarded M.Sc. degree in Distributed Systems and Networks from the University of Hertfordshire, Hatfield in 2006. In 2011 he received his Ph.D. degree in Computer Science from the University of Bradford, Bradford, United Kingdom. In 2003, he joined the Department of Computer Science, University of Umm Al-Qura, as an Assistant Teacher. Since August 2011 he has been working for the Department of Computer Science as an Assistant Professor. He is a current administrator of recently established smart networks laboratory in the Computer Science Department. His current research interests include computer networks and Wireless Sensor Networks.