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Efficient nonintrusive load monitoring technique

Muhammad Kamran¹, Anum Mughees¹, Zoha Kamran¹ and Syed M Rafay Navaid²¹University of Engineering and Technology, Pakistan²Deakin University, Australia

With the advancement in smart grids, easy access to load monitoring and management is becoming essential feature of this modern system. In order to comply with this parameter, a novel nonintrusive load monitoring (NILM) technique is proposed in this paper. This technique is found cost effective, state of the art load monitoring and energy disaggregation that can be employed in conjunction with smart grids for smart energy management systems. NILM involves extracting load signatures of individual appliances from composite voltage and current signals and identifying those signatures by employing machine learning techniques. An introduction of novel feature extraction techniques involving fractal analysis has made it novel and comparison is made with other methods involving discrete wavelet analysis. Research has highlighted that fractal analysis has become emerging method for data extraction and analysis even utilizing artificial intelligence and neural networks. The results obtained in this research are appreciable to verify the effectiveness of novel technique of data extraction using fractal analysis which saves the time and cost of data management system and has become valuable feature of smart grids.

Biography

Muhammad Kamran has received his BSc and MSc Electrical Engineering (EE) (specialization in power) degree from University of Engineering & Technology (UET), Lahore, Pakistan in 1992 and 1999, respectively. He has completed his PhD in Computer Engineering from Beijing Institute of Technology, China in 2007. He is presently serving as a Professor and Campus Coordinator of a campus of UET, Lahore, Pakistan. He has 53 national and international publications focusing on computers and power engineering. Currently he is dealing with power system protection, power system quality and high voltage engineering at graduate and undergraduate level. He is also a Reviewer of famous international journals and conferences, Member of Pakistan Engineering Council Accreditation Committee, Convener of Higher Education Commission (HEC) and Pakistan Technology Curriculum Development Committee (2015).

mkamran@uet.edu.pk

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