

Title: A-SHNILM-A Data-Based Analysis of Super-State Hidden Markov Models in Non-Intrusive Load Monitoring

Name: Arooj Arif
University of Engineering and Technology, LHE54000, Pakistan

The Energy Crisis is costing economies worldwide and depleting natural resources at an alarming rate. Conservation of energy has become a point of concern particularly in large consumption sectors. Load monitoring is an effective solution to conserve electrical energy at a large-scale, cost-effectively. While many Non-intrusive Load Disaggregation techniques are in practice, some techniques have been known to outperform others. This paper discusses the most optimum unsupervised learning technique for load disaggregation in Non-intrusive Load Monitoring for Type-I and Type-II loads; catering to factors such as residential requirements, practicality in real time, ease of integration, scalability, feature extraction, reduced training and increased accuracy to meet the need of the time. A review of various implemented models of 'Super-State Hidden Markov Models' in NILM has been provided, to conclude that this methodology is the most efficient approach to load disaggregation in the provided case scenario that prevails on a large scale. A comparison with recent state-of-the-art work has also been provided to show that this approach out performs conventional approaches in terms of the above mentioned factors (catered to by super-state HMMs).
Index terms- Non-intrusive Load Monitoring, unsupervised learning, Type-I loads, Type-II loads, super-state Hidden Markov Models.

Biography

Arooj Arif is a final-year student at the Department of Electrical Engineering at University of Engineering and Technology, Lahore, Pakistan. Her fields of interest are Machine Learning, Electro-Magnetism and Architecture. She has extra-currciular work and community service in her credit. She has one conference publication as co-author.

Presenting author details

Full name: Arooj Arif
Contact number: +92-322-4230490
Twitter account: N/A
Linked In account: N/A
Session name/ number: Track 8
Category: Oral presentation