

**ENERGY EFFICIENT CLUSTERING AND ROUTING TECHNIQUES
IN HIERARCHICAL WIRELESS SENSOR NETWORKS**

Thesis submitted in partial fulfillment of the degree of

**DOCTOR OF PHILOSOPHY
IN
ELECTRONICS AND COMMUNICATION ENGINEERING**

By

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80_Recommendation

Developing algorithms for secured cluster-based routing can lead to significant advancements in efficiency. Analyzing the kind of network and number of nodes can help to increase efficiency and network lifetime. Any real-time application could make use of the developed secure clustered based routing protocol. The same protocol may be used for a heterogeneous network.