



COLLEGE of ENGINEERING AND PHYSICAL SCIENCES

SCHOOL OF COMPUTER SCIENCE

MSc Defence

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*A Review of the Replicability and Implementation of the
Efficient Clustering Scheme for MANETs in Remote Canadian Communities*

Chair: Dr. Fangju Wang

Advisor: Dr. Dan Gillis

Advisory: Dr. Jason Ernst [Adjuncy in SoCS]

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Abstract:

Remote communities in Canada have been suffering from a lack of equity towards Internet availability and connectivity in recent years. With online interactions becoming more necessary in recent years, it has furthered the Digital Divide that is faced within Canada. Mobile Ad hoc Networks (MANETs) are an alternative that can help community members use digital applications to communicate with one another more reliably, and therefore must be investigated further.

An important research area in MANET studies is Clustering within the network, as it has the potential to increase connectivity and reliability for the users, while limiting the required overhead of the networks. The Efficient Clustering Scheme (ECS) is one of these Clustering algorithms which shows the potential to be employed in Rural areas due to the key mechanics of Cluster Guest nodes and lack of network downtimes for restructuring. Unfortunately, due to the lacking nature of MANET studies in regards to replicability, many assumptions towards the algorithm have to be made and thus it is necessary to validate the approach before implementing it in a community in order to not create further issues for the community members.

Therefore, this thesis will explore the replication and implementation details of the Efficient Clustering Scheme, and simulate how it would operate in an area with a density similar to Rigolet, a remote Canadian community in Nunatsiavut.