Notice of the Final Oral Examination
for the Degree of Master of Applied Science

of

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BEng (University of Victoria, 2015)

“Utilizing Crowd Sourced Analytics for Building Smarter Mobile Infrastructure and Achieving Better Quality of Experience”

Department of Electrical and Computer Engineering

Thursday, December 3, 2015
1:00 P.M.
Engineering and Computer Science Building
Room 660

Supervisory Committee:
Dr. Thomas Darcie, Department of Electrical and Computer Engineering, University of Victoria (Co-Supervisor)
Dr. Stephen Neville, Department of Electrical and Computer Engineering, UVic (Co-Supervisor)

External Examiner:
Dr. Yvonne Coady, Department of Computer Science, UVic

Chair of Oral Examination:
Dr. Jooeun Ahn, Department of Mechanical Engineering, UVic

Dr. David Capson, Dean, Faculty of Graduate Studies
Abstract

There is great power in knowledge. Having insight into and predicting network events can be both informative and profitable. This thesis aims to assess how crowdsourced network data collected on smartphones can be used to improve the quality of experience for users of the network and give network operators insight into how the networks infrastructure can also be improved.

Over the course of a year, data has been collected and processed to show where networks have been performing well and where they are under-performing. The results of this collection aim to show that there is value in the collection of this data, and that this data cannot be adequately obtained without a device side presence. The various graphs and histograms demonstrate that the quantities of measurements and speeds recorded vary by both the location and time of day. It is these variations that cannot be determined via traditional network-side measurements. During the course of this experiment, it was observed that certain times of day have much greater numbers of people using the network and it is likely that the quantities of users on the network are correlated with the speeds observed at those times. Places of gathering such as malls and public areas had a higher user density, especially around noon which could is a normal time when people would take a break from the work day. Knowing exactly where and when an Access Point (AP) is utilized is important information when trying to identify how users are utilizing the network.