



**University
of Victoria**

Graduate Studies

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

of

MICHAEL ANDERSON

BEng (University of Victoria, 2013)

**“Performance Modelling of Reactive Web Applications
Using Trace Data from Automated Testing”**

Department of Electrical and Computer Engineering

Tuesday, April 23, 2019
10:00 A.M.
Engineering Office Wing
Room 430

Supervisory Committee:

Dr. Stephen Neville, Department of Electrical and Computer Engineering, University of Victoria (Co-Supervisor)

Dr. Thomas Darcie, Department of Electrical and Computer Engineering, UVic (Co-Supervisor)

External Examiner:

Dr. Neil Ernst, Department of Computer Science, UVic

Chair of Oral Examination:

Dr. Kathryn Gillis, School of Earth and Ocean Sciences, UVic

Dr. David Capson, Dean, Faculty of Graduate Studies

Abstract

This thesis evaluates a method for extracting architectural dependencies and performance measures from an evolving distributed software system. The research goal was to establish methods of determining potential scalability issues in a distributed software system as it is being iteratively developed. The research evaluated the use of industry available distributed tracing methods to extract performance measures and queuing network model parameters for common user operations. In addition, performance measure extraction was tested across several historical releases of a real-world distributed software system. The changes in performance measures across releases correspond to several scalability issues identified in the production software system.