



**University
of Victoria**

Graduate Studies

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

of

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BSc (Victoria University of Technology, 1995)

“iDEM: intergrator of Digital Elevation Models”

Department of Computer Science

Thursday, December 17, 2015

1:00pm

Engineering Computer Science Building
Room 468

Supervisory Committee:

Dr. Yvonne Coady, Department of Computer Science, University of Victoria (Supervisor)

Dr. Sue Whitesides, Department of Computer Science, UVic (Member)

Dr. Tania Lado Insua, Ocean Networks Canada (Additional Member)

External Examiner:

Dr. Stephen Neville, Department of Electrical and Computer Engineering, UVic

Chair of Oral Examination:

Dr. Paul Zehr, Division of Medical Sciences and School of Exercise Science, Physical and Health
Education, UVic

Abstract

iDEM makes it possible to automate the creation of customized digital elevation models (DEM) complete with digital confidence model (DCM) and metadata history. Originally conceived as a solution to creating DEM for tsunami modelling iDEM is applicable to modelling any spherical surface. The automation of customized DEM is accomplished by integrating functions from existing applications as subsystems to build a new system. The new iDEM controlling framework ties the integrated applications together bridging the gap between discrete datasets and interpolation using a new data merging algorithm. The creation of DEM utilizes an amalgamation of three existing fusion methods that allow tiling without edge distortion and propagates data uncertainty to create a DCM for every DEM. The challenge of needing data in different formats to be easily integrated into DEM with confidence is tackled by automatically generating customized DEM based on the best data fusion techniques and optimal measurements available.