NOTICE OF THESIS
PROPOSAL PRESENTATION
Geodesy and Geomatics Engineering
Master of Science in Engineering

Ryan Brideau

Tuesday, September 26, 2017 @ 3:00 pm
Head Hall – ADI Studio room C-25

Supervisor: Monica Wachowicz, Geodesy and Geomatics Engineering
Supervisory Committee: David Coleman, Geodesy and Geomatics Engineering
                          Nick Hedley, Simon Fraser University

Chair: To Be Announced

Building Robust, Replayable Systems for Visualizing Spatiotemporal Data Streams

ABSTRACT
As geospatially distributed devices and sensors become more common in transportation, energy infrastructure and communications, the need to process and visualize the streams of data they produce in a timely and accurate way has become increasingly important. While major advances have been made in building distributed processing platforms that combine stream and batch processing, and that can accommodate the real-world problems of network delays and out-of-order events, little has been done to demonstrate their usefulness as a widely-applicable foundation for geospatial analysis and visualization.

When faced with building a system to process and visualize streams of spatiotemporal data, traditional approaches often limit their applicability to a subset of use-cases where timeliness and perfect accuracy are not high priority, and scale is not considered important. By addressing these problems, however, one can create systems that are more robust against failure overall, and have the side-effect that they are interactively replayable for any point in space and time.

Our approach to solving this problem is not to propose an entirely new architecture, but to demonstrate that existing architectures developed to solve these problems in other domains such as marketing analytics can be extended to support spatiotemporal visualization. Once developed, this platform will be tested under a variety of scenarios involving node-failure, faulty networks and devices, and high data volumes to demonstrate its suitability for addressing these issues.

Faculty Members and Graduate Students are invited to attend the presentation