



**NOTICE OF
UNIVERSITY ORAL**
GEODESY AND GEOMATICS ENGINEERING

Master of Science in Engineering

William Liu

Wednesday, August 24 @ 2pm

The defence will take place at UNBF Head Hall (15 Dineen Dr.),
on E level in Room 11 or you may contact Lisa Valenta
(l.valenta@unb.ca) for a link to join virtually

Board of Examiners:

Supervisor: Dr. Yun Zhang, Geodesy & Geomatics Eng.

External: Dr. Kevin Englehart, Electrical and Computer Eng.

Chair of Board: Dr. Shabnam Jabari, Geodesy & Geomatics Eng.

**Improving Forward Mapping and Disocclusion Inpainting
Algorithms for Depth-Image-Based Rendering and
Mapping**

ABSTRACT

Depth-image-based Rendering (DIBR) is a promising technique to generate appealing and immersive contents for virtual reality image mapping. When mapping a reference image to a virtual image, two challenges exist: (1) the most widely used forward mapping algorithm is prone to generating synthetic artifacts; and (2) the existing disocclusion inpainting algorithms are not able to fill big holes in a visually plausible way. This research conducted a comprehensive investigation on the forward mapping algorithm and developed a new algorithm that can eliminate all the reported artifacts of small cracks. This research also developed a novel directional and adaptive hole-filling algorithm using an exemplar-based approach to fill big holes. The performance of the developed algorithms was validated using images from a selected benchmark database. Quantitative and qualitative assessments proved that the developed algorithms have clearly outperformed the state-of-the-art algorithms. The developed algorithms were applied to outdoor/indoor mapping applications to prove the concept. It validated the feasibility of using the developed algorithms to improve user experiences on existing Street View technologies.

All Faculty Members and Graduate Students are invited to attend this presentation.