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

of

XI (NATHAN) SUN

BSc (Nanjing University of Aeronautics and Astronautics, 2003)
MSc (Nanjing University of Aeronautics and Astronautics, 2008)


Department of Computer Science

Thursday, August 20, 2020
10:30 A.M.
Remote Defence

Supervisory Committee:
Dr. Yvonne Coady, Department of Computer Science, University of Victoria (Supervisor)
Dr. Sowmya Somanath, Department of Computer Science, UVic (Member)

External Examiner:
Dr. David Bristow, Civil Engineering, UVic

Chair of Oral Examination:
Dr. Adam Con, School of Music, UVic

Dr. Stephen Evans, Acting Dean, Faculty of Graduate Studies
Abstract

BUDI (Building Urban Designs Interactively) is an integrated 3D visualization and remote collaboration platform for complex urban design tasks. Users with different backgrounds can remotely engage in the entire design cycle, improving the quality of the end result. In this paper, consider the trade-offs encountered when trying to make spatial-based collaboration seamless. Specifically, I detail the multi-dimensional data visualization and interaction the platform provides, and outline how users can interact with and analyze various aspects of urban design.

In BUDI, the display and interactive environment was designed to seamlessly expand beyond a traditional two-dimensional surface into a fully immersive three-dimensional space. Clients on various devices connect with servers for different functionalities through functionality tailored for different user groups. A demonstration with a local urban planning use-case shows the costs and benefits of BUDI as a spatial-based collaborative platform. A performance evaluation with remote collaboration shows how the platform can meet the requirements for real-time and seamless collaboration.