



**University
of Victoria**

Graduate Studies

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

of

DANY ALEJANDRO CABRERA VARGAS

BEng (University of Cauca, 2015)

**“Wall Extraction and Room Detection for Multi-Unit
Architectural Floor Plans”**

Department of Computer Science

Wednesday, September 12, 2018
12:00 P.M.
Engineering Office Wing
Room 430

Supervisory Committee:

Dr. Alexandra Branzan Albu, Department of Computer Science, University of Victoria (Supervisor)
Dr. Maia Hoeberechts, Department of Computer Science, UVic (Member)

External Examiner:

Dr. Rishi Gupta, Department of Mechanical Engineering, UVic

Chair of Oral Examination:

Dr. Christopher Bose, Department of Mathematics and Statistics, UVic

Dr. David Capson, Dean, Faculty of Graduate Studies

Abstract

In the context of urban buildings, architectural floor plans describe a building's structure and spatial distribution. These digital documents are usually shared in formats that discard the semantic information related to walls and rooms. This work proposes a new method to recover the structural information by extracting walls and detecting rooms in 2D floor plan images, aimed at multi-unit floor plans which present challenges of higher complexity than previous works. Our proposed approach is able to handle overlapped floor plan elements, notation variations and defects in the input image, and its speed makes it suitable for real applications on both desktop and mobile devices. We evaluate our methods in terms of precision and recall against our own annotated dataset of multi-unit floor plans.