University of Victoria | Graduate Studies

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

of

# SRI RAGHU MALIREDDI

BTech (Indian Institute of Technology of Gandhinagar, 2016)

## "Systematic Generation of Datasets and Benchmarks for Modern Computer Vision"

Department of Computer Science

Thursday, March 28, 2019
9:00 A.M.
Engineering / Computer Science Building
Room 660

Supervisory Committee:
Dr. Kwang Moo Yi, Department of Computer Science, University of Victoria (Supervisor)
Dr. George Tzanetakis, Department of Computer Science, UVic (Member)

External Examiner:
Dr. T. Aaron Gulliver, Department of Electrical and Computer Engineering, UVic

Chair of Oral Examination:
Dr. Neil Burford, Department of Chemistry, UVic

Dr. David Capson, Dean, Faculty of Graduate Studies

## Abstract

Deep Learning is dominant in the field of computer vision due to its high performance. This high performance of deep learning is driven by large annotated datasets and proper evaluation benchmarks. We, therefore, create large annotated dataset and a proper evaluation benchmark for two importance areas in computer vision, hand segmentation and local features, that have started to receive attention from deep learning community. For hand segmentation, we create a novel systematic way to easily create automatic semantic segmentation annotations for large datasets. We achieved this with the help of traditional computer vision techniques and minimal hardware setup of one RGB-D camera and two distinctly colored skin-tight gloves. For local features, we create a new modern benchmark, that reveals different aspects, specifically wide-baseline stereo matching and Multi-View Stereo (MVS), of keypoints in a more practical setup than the existing ones, because the existing benchmarks do not represent the performance well which leads to a biased development of new local feature methods. Proper evaluation benchmarks is a catalyst for enabling deep learning to succeed.