**University of Victoria** | Graduate Studies

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

of

## TANMANA SADHU

BTech (West Bengal University of Technology, 2013)

## "Obstacle Detection for Image-Guided Surface Navigation"

Department of Electrical and Computer Engineering

Friday, August 26, 2016
1:30 P.M.
Engineering and Computer Science Building
Room 660

Supervisory Committee:
Dr. Alexandra Branzan-Albu, Department of Electrical and Computer Engineering, University of Victoria (Co-Supervisor)
Dr. Maia Hoeberechts, Department of Computer Science, UVic (Co-Supervisor)

External Examiner:
Dr. Geoff Steeves, Department of Physics, UVic

Chair of Oral Examination:
Dr. Roberta Hamme, School of Earth and Ocean Sciences, UVic

Dr. David Capson, Dean, Faculty of Graduate Studies

## **Abstract**

An issue of concern for maritime safety when operating a small to medium-sized sailboat is that the presence of hazards in the navigational route in the form of floating logs can lead to a severe collision if undetected. As a precautionary measure to prevent such a collision with a log, a 2D vision-based detection system is proposed. We take a combined approach involving predictive mapping by linear regression and saliency detection. This approach is found to overcome specific issues related to the illumination changes and unstructured environment in the dataset. The proposed method has been evaluated using precision and recall measures. This proof of concept demonstrates the potential of the method for deployment on a real-time onboard detection system. The algorithm is robust and of reasonable computational complexity.