ST. FRANCIS XAVIER UNIVERSITY

Department of Mathematics, Statistics and Computer Science
St. Francis Xavier University
presents

Attributed Relational Graph-Based Learning of Object Models for Object Segmentation

by

Nasreen Akter

St. Francis Xavier University

M.Sc. Thesis Proposal Presentation

Wednesday, December 17th @ 10am in Annex 23A

In computer vision problems, e.g., object recognition, semantically accurate segmentation of a particular object of interest (OOI) is critical. Although object segmentation is a low-level visual process, it is a key step towards high-level tasks such as image understanding. Traditional segmentation techniques use low-level visual features, e.g., color, texture, to segment an image into a set of homogeneous regions. Unfortunately, such regions usually do not correspond to semantically meaningful objects. An object of a particular class consists of a set of homogeneous regions with spatial relations among them. Thus, class-specific knowledge on the visual appearance and spatial arrangement of the regions can be useful in discriminating among objects from different classes. In order to improve segmentation accuracy, some methods apply machine learning to generate a model of the OOI that includes such knowledge. However, the majority of those methods require significant manual intervention, which heavily restricts their applicability to different domains. Recently, a few methods have been proposed to minimize manual intervention. In this research, we propose the use of the attributed relational graph (ARG) formalism as a means of representing both visual and spatial information in a single structure. In the proposed framework, a training set of images, each of which contains an instance of the OOI, is given. Afterwards, each image is over-segmented into a set of visually homogeneous regions and the corresponding ARG is constructed. Given such graph representations, OOI model learning reduces to a subgraph matching problem. Promising preliminary experimental results will be discussed.