Detecting rare events in modern system

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Date: 24th July 2013 (Wednesday)
Time: 11:00am (Tea/Coffee service at 10:45am)
Venue: P4701, AC1

Abstract

Rare event detection is a critical but challenging task in many application domains. In this work, we formulate the detection problem as an imbalanced classification problem. Approaches to imbalanced classification usually focus on rebalancing the class sizes. However, a hidden complex structure of the majority class may also significantly impact rare event detection, especially in high-dimensional data. In this work, we counter this by learning the hidden structure in the majority class from the training dataset. We propose doing this by decomposing the majority class using an unsupervised learning algorithm. We perform prediction on test dataset using an ensemble of classifiers learned on each sub-cluster-minority class pair. We provide a systematic approach for selecting the unsupervised learning algorithm, and constructing the ensemble classifier, with greater preference for predicting minority class instances correctly. We demonstrate the
performance of the proposed approach through various real datasets. I will conclude the talk with a discussion on future work.

About the Speaker

Yang Zhao received her bachelor’s degree in statistics from Shandong University of Science and Technology in 2011. She is currently a Ph.D. student in the Department of SEEM, City University of Hong Kong. Her research interests are in machine learning and statistics, especially their application to real problems.

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All are Welcome!

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