



**The Hong Kong Polytechnic University
Department of Applied Mathematics**

Seminar

On

**Comparing the expected misclassification cost for two
classifiers based on estimates from the same sample**

by

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Abstract

Comparison of two binary classifiers evaluated on the same sample is considered. McNemar test can be used to compare overall predictive accuracy. To evaluate the classifiers in a clinically relevant manner, expected misclassification cost should be accounted for. A Wald test can be constructed for this purpose. A likelihood ratio test for comparison of two classifiers on expected misclassification cost is further derived. The null distribution of the test statistic is approximated by simulation from strategically chosen parameter values. The properties of the tests are examined through simulations of correlated classification indicators. The Wald test has approximated Type I error control while maintaining a power advantage over the likelihood ratio test and is therefore recommended for most applications. If conservative error control is desired, the likelihood ratio test calibrated from several strategically chosen parameter values is recommended. The methods are illustrated on a nested case-control study on pre-eclampsia and a prospective cohort study on coronary heart disease.

Date : 15 Nov 2012 (Thursday)

Time : 2:30 p.m. – 4:30 p.m.

Venue : HJ610, The Hong Kong Polytechnic University

*** * * ALL ARE WELCOME * * ***