MARQUETTE
UNIVERSITY
HELEN WAY KLINGLER
COLLEGE OF ARTS AND SCIENCES

Department of Mathematics, Statistics and Computer Science

COLLOQUIUM ANNOUNCEMENT

The False Discovery and False Non-Discovery Rate in Correlated Tests

Md Manzur Rahman Farazi

MSCS Department

Marquette University

3:30 PM, Thursday, October 26, 2017

Cudahy Hall, Room 401

Abstract

In high dimensional data analysis such as in a microarray experiment of gene expression level in which thousands of genes are being investigated for possible disease involvement, we concurrently test a very large number of hypotheses. And the probability of observing atleast one significant result simply due to chance keeps going up with the increase of number of tests. Numerous methods have been developed to control type the error rates; the family-wise error rate (FWER) and the false discovery rate (FDR) have been proposed as suitable significance criteria to perform the multiple testing adjustment while still keen to high statistical power. The problem is even complex when such hypotheses have dependency. Most commonly used methods that assume independence are compared in this study. We calculate FWER, FDR with adjusted p values developed by Benjamini and Hochberg, the false non-discovery rate and statistical power in a simulation study with various correlation structure. Based on intuition we expect power to be increasing as correlation increases, however, all the methods fail to improve the quantities with the increase of correlation values that suggest to improve or develop new method for testing dependent multiple tests.

POST COLLOQUIUM REFRESHMENTS SERVED IN CUDAHY HALL, ROOM 342 AT 4:30 P.M.