

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

Colloquium

Non-monotone Transformation of Biomarkers to Improve Diagnostic and Screening Accuracy in a DNA Methylation Study with Trichotomous Phenotypes

By

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Abstract

We propose a non-monotone transformation to biomarkers in order to improve the diagnostic and screening accuracy. The proposed quadratic transformation only involves modeling the distribution means and variances of the biomarkers and is therefore easy to implement in practice. Mathematical justification was rigorously established to support the validity of the proposed transformation. We conducted extensive simulation studies to assess the performance of the proposed method and compared the new method with the traditional methods. Case studies on real biomedical and epigenetics data were provided to illustrate the proposed transformation. In particular the proposed method improved the AUC values for a large number of markers in a DNA methylation study and consequently led to the identification of greater number of important biomarkers and biologically meaningful genetic pathways.

Date : 29 May, 2020 (Friday)

Time : 14:00-15:00 (Hong Kong Standard Time GMT +8)

Venue : Online Talk via Zoom (Meeting ID: 954 4113 9229)

Click to join : <https://polyu.zoom.us/j/95441139229>

* The Talk will be given in English.



[Click to join \(Zoom\)](https://polyu.zoom.us/j/95441139229)

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

For enrolment, please send your name and email to chingching.lu@polyu.edu.hk on or before 28 May 2020, Thursday.