Seminar Announcement

Speaker: Shibasish Dasgupta

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Date: 12th January, 2018

Time: 2:00pm - 3:00pm

Venue: Indian Statistical Institute, 110 Nelson Manickam Road, Aminjikarai, Chennai.

Title: A Bayesian Predictive Approach to Design Studies for Comparing Biomarkers

Abstract: Finding efficient biomarker is critically important for disease detection. Furthermore, rigorous evaluation of biomarkers is essential to guarantee that the tests that are developed are sufficiently accurate and beneficial to the patient. Here we propose a Bayesian predictive approach for determining sample size to compare efficiencies of two binary biomarkers. The operational criteria include classification accuracy, sensitivity, and specificity. In the frequentist approach, one usually estimates the operational criterion from the training data for each marker and using the estimate as the `true' value to select the sample size corresponding to a desirable power, say 80%. However, due to uncertainty to the training data estimates, the designed study could be underpowered when the estimates are treated as true. This may result in a substantially underpowered study while the sample size for the training data is small. In the Bayesian predictive approach the sample size is determined taking into account the uncertainty of the training data estimates. Through simulation studies, we show the effectiveness of the proposed approach.