Abstract

Sequential methodologies are applied for efficient sampling especially when accuracy levels of derived test and estimation procedures are pre-fixed before gathering information and data. Indeed sequential methodologies are applied in all conceivable areas of statistical science whereas the goal of this workshop is to create some appreciation of what this field has to offer. We will begin with a quick overview of a broad spectrum of applications in different substantive areas.

This workshop will focus on some selected material from a recent textbook, *Sequential Methods and Their Applications* by Nitis Mukhopadhyay and Basil M. de Silva, CRC Press, Chapman & Hall, 2009. We refer to this as “MD (2009)” in the sequel.

The most well-known example consists of a sequential probability ratio test (SPRT) which controls both type-I and type-II error probabilities with minimum average sample sizes under both hypotheses. We will refer to MD (2009, chapter 3).

The SPRT method will be followed by some of the sequential fixed-precision estimation techniques. More specifically, we will cover (i) confidence interval estimation of a normal mean (MD 2009, chapter 6) and (ii) confidence interval estimation based on maximum likelihood estimators for known distributions other normal (MD 2009, chapter 9). If time permits, we may touch upon one or two distribution-free methods (MD 2009, chapter 10).

In this workshop, we will introduce a number of sequential and multi-stage sampling methodologies emphasizing their implementations. The associated data analyses will be illustrated with the help of executable versions of the related computer programs accompanying the textbook, MD (2009).

*A half-day workshop to run on Monday, 26 December, 2011 from 2:00 PM to 5:00 PM prior to an international conference organized by the Applied Statistical Association of Sri Lanka on “Statistical Concepts and Methods for the Modern World”.*