Award Ceremony

Abraham Wald Prize in Sequential Analysis

Organizer and Chair: **Nitis Mukhopadhyay**

The third "Abraham Wald Prize in Sequential Analysis" award ceremony for the best judged published manuscript in 2006 Sequential Analysis (SQA) journal. This is a 90 minute special session with a 20 minute award ceremony for the 2006 winner to be announced and the SQA Editor's Special Invited Paper (45-50 minute presentation plus a question and answer period) described below:

SQA Editor's Special Invited Paper Presentation:

"Optimal Sequential Surveillance for Finance, Public Health and Other Areas"

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Abstract:
Change is a part of life and hence changes are of interest in many areas of statistical science. The aim of sequential surveillance is to detect important changes in an underlying process as soon as possible after the changes have occurred. By the way, the common statistical methods suitable for surveillance differ from hypothesis testing methods. Also, the criteria for optimality often differ from those used for hypothesis testing. Around 1930, Walter A. Shewhart developed the first versions of sequential surveillance by introducing control charts for industrial applications. Although industrial applications are still important, many new applications have come into focus. Emerging needs in other areas and the availability of good computing resources have encouraged the development of more advanced and efficient methods taking into account newer requirements of optimality. Even though some of these methods have been developed under differing scientific cultures, inferential similarities can be identified. Some of the prospective decision rules used in finance, for example, have inferential similarities with some of the methods used in statistical surveillance. The optimal time points to trade are related to regime shifts in the stochastic properties of an indicator. Thus, finding the optimal time point to trade is equivalent to the timely detection of a regime shift. Also, a measure commonly used for evaluation in finance can be closely tied to an optimality criterion of sequential surveillance. Other economical regime shifts, such as changes in business cycles, can also be detected by employing the methods commonly used for statistical surveillance. In the area of public health, the methods for detection of bio-terrorism and new infectious diseases have recently drawn much attention. The timely detection of various types of adverse health conditions is an important concern. The spatial clustering of adverse health conditions could also be associated with the presence of some environmental hazards. Statistical surveillance methodologies have been used for environmental monitoring, for example, in the contexts of biodiversity and warning systems for radiation leaks. Expressing methods for surveillance through likelihood functions makes it possible to link the methods to various optimality criteria. This approach also facilitates the choice of an optimal surveillance method for each specific application and provides some directions for improving upon some of the existing suggested methods.