The Institute of Statistical Mathematics   **Japan Statistical Society**

July 14, 2016

The Institute of Statistical Mathematics and the Japan Statistical Society Joint Inaugural Akaike Memorial Lecture Award, Selection of the First Awardee

◆ Introduction

The Institute of Statistical Mathematics (ISM) and the Japan Statistical Society (JSS) have inaugurated the Akaike Memorial Lecture Award under their joint sponsorship. The lecture will be presented during the Japanese Joint Statistical Meeting, a combined meeting of the organizations involved in the statistical sciences, and will feature a biennial lecturer recognized for his or her research accomplishments in this field. A memorial to the legacy of Dr. Hirotugu Akaike, we hope that this lecture will be a valuable stimulus to the minds of younger colleagues and contribute to the development of the statistical sciences.

The first lecture will be held as the planning session of the JSS for the 2016 Japanese Joint Statistical Meeting, which will be held at Kanazawa University from Sunday, September 4 to Wednesday, September 7.

As the awardee, ISM and JSS are proud to announce to have retained Prof. C.F. Jeff Wu of Georgia Institute of Technology, School of Industrial and Systems Engineering.

◆ Overview of the Akaike Memorial Lecture Award

The Akaike Memorial Lecture Award has been planned since 2014 under the joint sponsorship of ISM and JSS. We have named this lecture award after Dr. Hirotugu Akaike, who left a wide-reaching and influential legacy of research in the statistical sciences, and intend for these events to be both opportunities for exchange among statistical researchers from inside and outside Japan and to provide inspiration to young and talented researchers, contributing to further advances in this field.

Every two years, one lecturer is selected under the standards of the Akaike Memorial Lecture Award Nominating Committee from among those individuals who have, like Dr. Akaike, stood out as being ahead of their time, exercising an international influence over a wide range of fields in the statistical sciences (including mathematical sciences such as control and optimization, and mathematical engineering) and applied fields. The awardee receives a ¥100,000 honorarium, an award plaque, and travel expenses.

To promote the education of students and young researchers, the Akaike Memorial Lecture features a selected board of representatives who will engage in discussions after the lecture. The lecture and follow-up discussion will be published as an invited paper in the *Annals of the Institute of Statistical Mathematics* (AISM) or the *Journal of the Japan Statistical Society* (JJSS).

◆ **First Awardee: Prof. Chien-Fu Jeff Wu**

【**Experience**】

1949	Born in Taiwan
1971	B.Sc. (Mathematics) National Taiwan University
1976	Ph.D. (Statistics) University of California, Berkeley, USA
1976-1977	Lecturer, Department of Statistics University of California, Berkeley, USA
1977-1980	Assistant Professor, Department of Statistics, University of Wisconsin, Madison, USA
1980-1983	Associate Professor, Department of Statistics, University of Wisconsin, Madison
1983-1988	Professor, Department of Statistics, University of Wisconsin, Madison
1988-1993	Professor and GM/NSERC Chair in Quality and Productivity, Department of Statistics and Actuarial Science, University of Waterloo, Canada
1993-2003	Professor and Chair (1995-1998), Department of Statistics and Department of Industrial and Operations Engineering, University of Michigan, Ann Arbor, USA
1997-2003	H. C. Carver Professor of Statistics, University of Michigan, Ann Arbor
2003-	Professor and Coca-Cola Chair in Engineering Statistics, School of Industrial and Systems Engineering, Georgia Institute of Technology, Atlanta, USA

【**Research Accomplishments**】

Prof. C.F. Jeff Wu has been a vigorous pioneer in the theory of experimental design, EM algorithms and resampling, especially bootstrapping. His research has addressed a broad spectrum of topics in statistics; let us describe some of his particularly notable accomplishments below.

He proposed a general optimal design algorithm using the fact that approximate optimal design problems become constrained convex problems and proved that they converge asymptotically to the optimal design. He examined the convergence of EM algorithms and obtained results under conditions that are applicable to most practical problems. He also made key contributions to the justification of the bootstrapping and jackknife methods from the viewpoint of mathematical statistics.

As experimental design methods were quickening the development of new products and technologies in

Japanese industry in the early 1990s, Prof. Wu used advances in statistical methods to propose fundamental revisions to experimental design, based on the agricultural methods of R. A. Fisher and the robust parameter design method of Genichi Taguchi. He developed a new method called "conditional main effect analysis" for distinguishing among the effects of configuration, sparsity, the principle of transmission, and aliasing in factorial experiments, thereby contributing greatly to the development of the technometrics field.

Recently, Prof. Wu has devoted attention to virtual experiments on computers, in search of principles beyond those identified by Fisher for problems examined with numerical experiments.

【Reasons for Award】

Prof. Wu has conducted vigorous and pioneering work on the theory of experimental design, EM algorithms and resampling. His support of industry has also been highly valued and he has received many awards in statistical quality control. He has long recognized the importance of data science; on entering his post as H. C. Carver Professor at Michigan University in 1997, he gave a speech titled "Statistics = Data Science?" in which he emphasized the role of analysis of large volumes of data and cooperation with people in fields outside of statistics. More recently, he has proposed new methods for experimental design, adapted to the procedures of experiments performed on computers (simulations). Prof. Wu has maintained an exemplary balance among theory, procedure and applications in his research. Since he first came to Japan in 1987 together with Prof. G. E. P. Box to observe quality control in industries, he has visited this country many times and continued exchanges with Japanese statisticians and the industrial sector.

Prof. Wu has also visited ISM on several occasions to lecture and engage in discussions and debates with our young researchers. On the strength of Prof. Wu's record of research achievements as a statistician and his strong links with ISM and JSS, the nominating committee was proud to recommend Prof. Wu as an entirely appropriate awardee to deliver the first Akaike Memorial Lecture.

◆ **Akaike Memorial Lecture 2016**

　　　Speaker: Prof. C.F. Jeff Wu

　　　　　　　(Georgia Institute of Technology, School of Industrial and Systems Engineering)

　　　Title: A fresh look at effect aliasing and interactions: some new wine in old bottle

　　　Date and Time: September 5, 2016, 15:30-17:30

　　　Place: Kakuma Campus, Kanazawa University

　　　　　　　http://www.kanazawa-u.ac.jp/e/campuses/

◆ **Biography of Dr. Hirotugu Akaike**

Born on Nov. 5, 1927 in Shizuoka Prefecture, Japan, Hirotugu Akaike graduated from the First Higher School, the Imperial Naval Academy, and the Tokyo University Science Department Mathematics Faculty. He was accepted into the Institute of Statistical Mathematics in 1952.

He led the way in the field of time series analysis, with R&D resulting in software packages such as TIMSAC for spectral analysis, multivariate time series models, and statistical control methods. In the 1970s, he advocated for what was named the Akaike Information Criterion, a standard for data volume, establishing a new, prediction-centered paradigm for statistical modeling differing from conventional statistical theory. His research influenced a sweeping variety of research fields. In the 1980s, he participated in the development of practical implementations of Bayesian modeling, and played a leading role in finding new data processing methods suitable for the high-information age in which we now live. His research results were held in the highest esteem by his colleagues and earned him many prizes, including the Medal of Honor (Purple Ribbon), the Second Class Order of the Sacred Treasure, and the Kyoto Prize. Citations of his works continue to grow.

Dr. Akaike took the position of Director-General of ISM in 1986. While overseeing the operation of the Institute, he also took part in establishing and teaching on the Statistical Studies program at the Graduate University for Advanced Studies. His term as Director-General ended in 1994. He was appointed Professor Emeritus at the Graduate University for Advanced Studies but never lost his passion for research; rather than resting on his well-deserved laurels, he continued his work, publishing studies on Bayesian models and of the golf swing. He also served as the 19th president of the Japan Statistical Society from January, 1989 to December, 1990. He passed away in Ibaraki Prefecture on August 4, 2009 (age 81).

Hirotugu Akaike Memorial Website:

http://www.ism.ac.jp/akaikememorial/index_e.html