

**HAMPARSUM (HAM) BOZDOGAN, PH.D.**

*Toby & Brenda McKenzie Chair Professor*

716 Lake Vista Drive  
Friendsville, TN 37737  
865/995-9292 Home  
865/974-1635 Office

**E-mail: [bozdogan@utk.edu](mailto:bozdogan@utk.edu)**

**<http://web.utk.edu/~bozdogan>**

**"Research is to teaching as sin is to confession: without the one there is not much to say about the other."**

-On the Wall of National Science Foundation



**Dr. Hamparsum ("Ham") Bozdogan is Toby and Brenda McKenzie Chair Professor** in *Business, Information Complexity and in Model Selection* in the Department of Statistics, Operations, and Management Science in the College of Business Administration at the University of Tennessee Knoxville (UTK), Tennessee. He is also a faculty member in the *Center for Intelligent Systems and Machine Learning (CISML)* at UTK.

Dr. Bozdogan received his B.S. degree in Mathematics, 1970 from the University of Wisconsin-Madison, and both of his M.S. and Ph.D. degrees in Mathematics, 1978 and 1981, respectively, from the University of Illinois at Chicago majoring in Probability and Statistics (Multivariate Statistical Analysis and Model Selection) with a full-minor in Operations Research.

**Research Specializations and Interests:**

- ***High dimensional intelligent multivariate data mining.***
- ***Information-theoretic approach to statistical model building and evaluation problems; multivariate statistical modeling and data analysis; combinatorial classification and mixture-model cluster analysis problems for pattern recognition; linear and nonlinear multivariate models and structural complexity; covariance complexity measure; complexity of inverse-Fisher information matrix (ICOMP) as a criterion for model identification.***
- ***Statistical Information Theory & Entropy Complexity***
- ***Bayesian Modeling and Econometric Modeling.***
- ***Symbolic open architecture statistical computing in macro language environment; evolutionary and genetic algorithms; developing expert information-theoretic statistical techniques for data mining;***

**Personal:**

Born: Kayseri (Caesarea), Turkey  
Marital Status: Married  
Citizenship: U.S. Citizen (January 25, 1977)  
Ethnicity: Turkish-Armenian

**Education and Degrees:**

August 1981      Ph.D. Mathematics  
University of Illinois at Chicago  
**Major:** Probability and Statistics (**Multivariate Statistical Analysis and Model Selection**)  
**Minor:** Operations Research

Ph.D.: Thesis title: *Multi-Sample Cluster Analysis and Approaches to Validity Studies in Clustering Individuals*  
Supervisor: Prof. Stanley L. Sclove.

June 1978 M.S. Mathematics  
University of Illinois at Chicago  
Major: Mathematics, Probability and Statistics

June 1970 B.S. Mathematics  
University of Wisconsin, Madison, Wisconsin  
Major: Mathematics

**Positions Held and Professional Experience:**

April 1999-to date The Toby and Brenda McKenzie Chair Professor in Business, in Information Complexity and Model Selection, Department of Statistics, The University of Tennessee, 336 SMC, Knoxville, TN 37996-0532

- *Duties include to help facilitate significant activity in integrated, cross-functional research. To bring together the most current statistical science with the demands and needs of today's business management activity. To transcend the theoretical work of statistics to the arena of functional discipline work in business.*

1995-1999 Professor of Statistics, Department of Statistics, and Director of Statistics Micro-Computer Laboratory (SMCL), The University of Tennessee, 336 SMC, Knoxville, TN 37996-0532

- *Duties include teaching undergraduate and graduate courses in statistics, Ph.D. curriculum and course development, research, directing theses, and consulting.*

1990-1995 Associate Professor of Statistics, Department of Statistics, and Adjunct Associate Professor of Mathematics (1994-1996),

- *Duties include teaching undergraduate and graduate courses in statistics, Ph.D. curriculum development, research, directing theses, and consulting.*

1983-1989 Assistant Professor in Statistics, Department of Mathematics, University of Virginia, Mathematics-Astronomy Building, Charlottesville, Virginia.

- *Duties include teaching undergraduate and graduate courses in statistics and mathematics, curriculum development, research, directing theses, and consulting.*
- *Chairman, Statistics Forum of the University of Virginia, 1984-88.*
- *Graduate and Hiring Committee member in Statistics.*

Jan- Aug 1988 Visiting Associate Professor and Research Fellow, The Institute of Statistical Mathematics, Tokyo, Japan.

Spring 1986 Visiting Assistant Professor, Department of Statistics, Columbia University, New York, New York.

- 1981-1983      Assistant Professor, Department of Quantitative Methods, College of Business Administration, University of Illinois, Chicago, Illinois.
- *Duties included teaching undergraduate and graduate MBA courses in statistics, curriculum development, research, and consulting.*
- 1980-1981      Lecturer, Department of Quantitative Methods, College of Business Administration, University of Illinois, Chicago, Illinois.
- *Duties included teaching undergraduate courses in statistics, research, consulting, and serving in undergraduate curriculum committee.*
- 1979-1980      Visiting Lecturer, Department of Quantitative Methods, College of Business Administration, University of Illinois, Chicago, Illinois.
- *Duties included teaching undergraduate courses in statistics.*
- Winter and Spring 1979      Guest Instructor, Department of Mathematics, Mundelein College, Chicago, Illinois.
- *Duties included teaching statistics to undergraduates in the Weekend College.*
- Spring 1975- Summer 1980      Teaching Assistant, Department of Mathematics, University of Illinois, Chicago, Illinois.
- *Duties included teaching undergraduate service courses in mathematics to business, engineering, liberal arts, and mathematics majors.*
- Fall 1974      Instructor, School of Physical Therapy, Northwestern University McGaw Medical Center, Chicago, Illinois.
- *Duties included teaching statistical methods in research and SPSS (Statistical Package for the Social Sciences) to physical therapy students.*
- January 1973- May 1975      Research Associate in Statistics, Searle Rehabilitation Research Center, Sociological Research Unit, Rehabilitation Institute of Chicago-Northwestern University McGaw Medical Center, Chicago, Illinois.
- *Duties included research in the areas of multivariate statistical analysis, experimental design, the design and the analysis of sample surveys, regression analysis, project and program evaluation, the linkage of these areas with computer statistical and library packages in medical and sociological rehabilitation research problems. Supervised research assistants and other research staff. Served as a high-level statistical consultant for other departments involved in medical research in the areas: calcium and bone cancer research, neuromuscular research, stroke, pulmonary rehabilitation research, and others.*

## ***Curriculum Vitae of Dr. Bozdoğan***

- 1971-1972                      Teaching Fellow, Department of Statistics,  
University of Michigan, Ann Arbor, Michigan.
- ***Duties included teaching introductory probability and statistical applications to industrial engineering undergraduate students.***
- 1970-1971                      Teaching Assistant, Department of Mathematics, University of Kentucky,  
Lexington, Kentucky.
- ***Duties included teaching undergraduate service mathematics courses.***
- 1969-1970                      Teaching Assistant (Senior Year), Department of Mathematics Extension,  
University of Wisconsin, Madison, Wisconsin.
- ***Duties included teaching correspondence courses in mathematics to Army, Navy, and Air Force servicemen.***

### **Awards and Honors:**

- Invited to become a Research Member of the Applied Statistics Research Center of the University of Milan-Bicocca in Business Intelligence and Data Mining in Milan, Italy, June 2011.
- Received International Appreciation Plaque from the Dean of the School of Business of Istanbul University as a Panelist in the Open Forum on the Future of Cross-Disciplinary Fields in Business, Istanbul, Turkey, May 18, 2011.
- Advisory Board Member at the International level of the School of Business of Istanbul University, Istanbul, Turkey, February 2011. Advisory Board advises the Dean of the School of Business in strategic decision facing the School of Business Administration.
- Finalist for the Martin and Carol Robinson Outstanding Teaching, Research and Service Award of CBA, 2011.
- Nominated for the Chancellor's Teaching Excellence Award, 2011.
- Summer 2009 Graduate Research Assistantship Proposal. \$3, 600 for Esra Turan on Mixture of Factor Analyzers for High Dimensional Data Mining Using Information Complexity, UT Research Office.
- Finalist for the CBA Teaching, Research and Service Award 2007.
- The University of Tennessee **Jefferson Faculty Prize Award for 2006**. The Jefferson Prize was established through an endowment by an anonymous donor who wanted to recognize tenured or tenure-track faculty members who have demonstrated excellence in research and creative activity or have made other significant achievements that might not be recognized in the usual university reward system.
- Nominated to the College of Business Administration's Allen H. Keally Outstanding Teacher(s) Award for 2006.
- Nominated to Chancellor's Excellence for Teaching Awards for 2006.
- Nominated to 2005 the University of Tennessee National Alumni Association (UTNAA) Outstanding Teacher Award.

- The prestigious **Medal of Honor Award Plaque from the Governor of Fethiye Municipality, Turkey** for outstanding contribution to the International Conference in Inverse Problems: Modeling and Simulation, June 2004.
- Twice Finalist of Outstanding Research Award of the College during the Spring 2004, 2005.
- Twice Finalist of Jefferson Prize Award of the University during the Spring 2004, 2005.
- **Haslam Teaching/Curriculum Innovation Program (HTCIP) Award** of the College of Business Administration (CBA), Spring, 2004.
- **The Bank of America Faculty Leadership Medal Award of the College of Business Administration (CBA)** during April 2001. This award is given to a member of the faculty in good standing as determined by the committee; Demonstrated willing and significant work with students in classroom activities that encourage the development of student leadership skills; Demonstrated leadership in activities outside the classroom involving colleagues both inside and outside of the College of Business pertaining to curriculum innovation and/or development; Demonstrated leadership in academic professional organizations; Demonstrated leadership including elected or appointed positions within professional organizations, UT organizations or community, national, international, or regional organizations and charitable organizations.
- Invited to visit the prestigious Center for Economic Research as **Senior Researcher**, Tilburg University, Tilburg, the Netherlands, May 10-June 30, 1999.
- **The Hoechst Roussel Teaching and Research Award** of the College of Business Administration of the University of Tennessee in Knoxville Tennessee. This award is given to an outstanding faculty member in the College of Business Administration each year who uniquely combines and demonstrates the importance and effectiveness of their teaching and research in the classroom by what they have created through their research program. April, 1997.
- **Won world research competition award in applied econometric modeling among 28 worldwide participating teams to forecast U.S. and Dutch food consumption during September 1996.**
- NSF Conference on Group Travel Award & UTK Research Incentive Award to present an invited paper at the International Workshop on Statistical Mixtures in Aussois, France during September 17-21, 1995.
- A finalist of Chancellor's Outstanding Teaching Award April 1995 and the Hoechst-Celanese Teaching and Research Award, the University of Tennessee, April 1995 & April 1996.
- Nominated to the Parzen Fund Prize for Statistical Innovation, April 1994. This award is given to statisticians in North American universities who have made outstanding and influential contributions to the development of applicable and innovative statistical methods.
- Nominated to Paul Minton Service Award in recognition of individuals for outstanding service to the statistics profession, January 1993.
- **Chancellor's Award for Research and Creative Achievement, the University of Tennessee, Knoxville (UTK), April 7, 1993. This award is given each year to 10 UTK faculty who have recently made significant contributions in their field of study. The award includes \$2,500 cash prize and Chancellor's Certificate of Citation.**
- Computer-Based Instructional Materials (CBIM) award of the College of Business Administration, the University of Tennessee. Funded by the Ball Corporation Faculty Development Fund to develop computer-aided symbolic computational modules in multivariate statistical modeling, January 1991-January 1994.

- College of Business Administration Faculty Research Fellowship Award, The University of Tennessee, May 1991 & 1992.
- Research Assignment Leave Award, Dean of the Faculty of Arts & Sciences, University of Virginia, Spring 1988.
- **Invited to visit the Institute of Statistical Mathematics of Tokyo, Japan as a Visiting Associate Professor and a Research Fellow by the Institute and the Ministry of Education, Science and Culture of Japan, January to August 1988.**
- NSF Conference on Group Travel Award to present two papers at the First Conference of the International Federation of Classification Societies (IFCS-87) in Aachen, West Germany during June 29-July 1, 1987.
- Graduate College Research Board Travel Awards, University of Illinois at Chicago, 1980 and 1981.
- President and Founding Member of OMEGA RHO International Honorary Society in Operations Research, Management Sciences and Systems Engineering of the University of Illinois, Chicago Campus Chapter, 1978-1979.
- Elected to Who's Who Among Students in American Universities and Colleges by the University of Illinois at Chicago, 1978-1979.
- NATO Science Fellowship, Turkish Scientific and Technological Council, Office of the Prime Minister, 1972 (declined due to obligatory service requirement).
- Caloust Gulbenkian Foundation Scholarships, Lisbon, Portugal: 1966-1967, 1967-1968, and 1968-1969 at the University of Wisconsin, Madison, Wisconsin.

**Memberships in Scientific Societies:**

- American Statistical Association (ASA)
- The Classification Society of North America (CSNA)
- Research Association of Statistical Sciences (RASS) Kyushu University, Fukuoka, Japan
- Japan Statistical Society (JSS) (elected member)
- International Society of Bayesian Analysis (ISBA)
- Turkish Statistical Association

**List of Publications:**

**Published Books:**

1. *Multivariate Statistical Modeling and Data Analysis*. Editor with A. K. Gupta, D. Reidel Publishing Company, Dordrecht, Holland, 1987.
2. *Theory & Methodology of Time Series Analysis*, Volume 1, Proceedings of First US/Japan Conference on The Frontiers of Statistical Modeling: An Informational Approach. Editor, Kluwer Academic Publishers, Dordrecht, the Netherlands, 1994.
3. *Multivariate Statistical Modeling*, Volume 2, Proceedings of First US/Japan Conference on The Frontiers of Statistical Modeling: An Informational Approach. Editor, Kluwer Academic Publishers, Dordrecht, the Netherlands, 1994.

4. [Engineering & Scientific Applications of Informational Modeling](#), Volume 3, Proceedings of First US/Japan Conference on The Frontiers of Statistical Modeling: An Informational Approach. Editor, Kluwer Academic Publishers, the Netherlands, 1994.
5. [Measurement and Multivariate Analysis](#), Co-editor with S. Nishisato, Y. Baba, and K. Kanefuji, Springer Verlag, Tokyo, Japan, March 2002.
6. [Statistical Data Mining & Knowledge Discovery](#), Editor, Chapman & Hall/CRC, Boca Raton, 2004.

**Books in Preparation:**

- [Information Complexity and Multivariate Learning in High Dimensions with Applications in Data Mining](#). In preparation-sole author, 2012-13.
- [Information Complexity TOOLBOX with MATLAB](#) 2012-13.
- [Multivariate Statistical Modeling & High Dimensional Data Mining](#). Editor, of the Conference book, to be published by either Chapman & Hall/CRC, or World Scientific Publishing Company, 2012-13.
- [Multivariate Mixed-Data Mining with Gifi System Using Genetic Algorithm and Information Complexity](#) (with Suman Katragadda), Chapman & Hall/CRC, 2012-13.
- [Modern Statistical Theory & Inference: An Informational Modeling Approach with MATLAB](#). In preparation-sole author.

**Research Papers Published in Refereed Journals/Proceedings:**

- [0] [Analysis of the General Equation of the Second Degree in Two Dimensions](#), Journal of Undergraduate Mathematics, Vol. 3, No. 1 (March 1971), pp. 7-14 (As an undergraduate, Senior Year Math Project).
- [1] [Multi-Sample Cluster Analysis Using Akaike's Information Criterion](#), Annals of Institute of Statistical Mathematics, Vol. 36, No.1, B, 1984, pp. 163-180 (with S. L. Sclove).
- [2] [Multi-Sample Cluster Analysis as an Alternative to Multiple Comparison Procedures](#), Bulletin of Informatics and Cybernetics, Vol. 22, No. 1-2, March 1986, pp.95-130.
- [3] [An Adjusted Likelihood-Ratio Approach to the Behrens-Fisher Problem](#), Communications in Statistics, Theory and Methods, 15 (8) 1986, pp. 2415-2433 (with D. E. Ramirez).
- [4] [Model Selection and Akaike's Information Criterion \(AIC\): The General Theory and Its Analytical Extensions](#), Psychometrika, Vol. 52, No. 3, 1987, Special Section (invited paper), pp. 345-370.
- [5] [Ideal Point Discriminant Analysis](#), Psychometrika, Vol. 52, No. 3, 1987, Special Section (invited paper), pp. 371-392 (with Y. Takane and T. Shibayama).
- [6] [Testing for Model Fit: Assessing and Box-Cox Transformations of Multivariate Data to 'Near' Normality](#), Computational Statistics Quarterly (CSQ), 3, 3, 1986, pp. 127-150 (with D. E. Ramirez).
- [7] [Two-Stage Multi-Sample Cluster Analysis as a General Approach to Discriminant Analysis](#). In **Multivariate Statistical Modeling and Data Analysis**, Eds. H. Bozdoğan and A. K. Gupta, D. Reidel Publishing Company, Dordrecht, Holland, October 1987, pp. 95-119 (with D. Eisenblatter).



- [8] *An Expert Model Selection Approach to Determine the 'Best' Pattern Structure in Factor Analysis Models*. In **Multivariate Statistical Modeling and Data Analysis**, Eds. H. Bozdogan and A. K. Gupta, D. Reidel Publishing Company, the Netherlands, Dordrecht, October 1987, pp. 35-60 (with D. E. Ramirez).
- [9] *An Adjusted Likelihood-Ratio Algorithm for the Behrens-Fisher Problem*, Statistische Hefte/Statistical Papers, 28, 1987, pp. 217-231 (with D. E. Ramirez).
- [10] *ICOMP: A New Model-Selection Criterion*. In **Classification and Related Methods of Data Analysis**, Ed. Hans H. Bock, Amsterdam: Elsevier Science Publishers B. V. (North-Holland) 1988, pp. 599-608.
- [11] *Selecting Loglinear Models and Subset Selection of Variables in Multiway Contingency Tables Using Akaike's Information Criterion (AIC)*. In **Classification and Related Methods of Data Analysis**, Ed. Hans H. Bock, Amsterdam: Elsevier Science Publishers B. V. (North-Holland) 1988, pp. 609-616.
- [12] *Two-Stage Multi-Sample Cluster Analysis*. In **Classification and Related Methods of Data Analysis**, Ed. Hans H. Bock, Amsterdam: Elsevier Science Publishers B. V. (North-Holland) 1988, pp. 91-96 (with D. Eisenblätter).
- [13] *FACAIC: Model Selection Algorithm for the Orthogonal Factor Model Using AIC and CAIC*, Psychometrika, Vol. 53, No. 3, Computational-Psychometrics, 1988, pp. 407-415 (with D. E. Ramirez).
- [14] *Finite Mixture Models for Cluster Analysis of Grouped Data*. In the Proceedings of the Japanese Classification Society, 1988 (invited paper), pp. 1-11.
- [15] *On the Information-Based Measure of Covariance Complexity and Its Application to the Evaluation of Multivariate Linear Models*, Communications in Statistics, Theory and Methods, A19 No. 1, 1990, pp. 221-278.
- [16] *Selecting the Number of Knots in Fitting Cardinal B-Splines for Density Estimation Using AIC*, Journal of the Japan Statistical Society (JJSS), Vol. 20-2, December 1990, pp. 179-190 (with T. Atilgan).
- [17] *Convergence Properties of MLE's and Asymptotic Simultaneous Confidence Intervals in Fitting Cardinal B-Splines for Density Estimation*, Statistics and Probability Letters, Vol.13, 1992, pp. 89-98 (with T. Atilgan).
- [18] *Choosing the Number of Component Clusters in the Mixture-Model Using a New Informational Complexity Criterion of the Inverse-Fisher Information Matrix*. In **Studies in Classification, Data Analysis, and Knowledge Organization**, O. Opitz, B. Lausen, and R. Klar (Eds.), Springer-Verlag, Heidelberg, 1993, pp. 40-54.
- [19] *Mixture-Model Cluster Analysis Using Model Selection Criteria and a New Informational Measure of Complexity*. In **Multivariate Statistical Modeling**, Vol. 2, Proceedings of the First US/Japan Conference on the Frontiers of Statistical Modeling: An Informational Approach, H. Bozdogan (ed.), Kluwer Academic Publishers, Dordrecht, the Netherlands, 1994, pp. 69-113.
- [20] *AIC-Replacements for Some Multivariate Tests of Homogeneity with Applications in Multisample Clustering and Variable Selection*. In **Multivariate Statistical Modeling**, Vol. 2, Proceedings of the First US/Japan Conference on the Frontiers of Statistical Modeling: An Informational Approach, H. Bozdogan (ed.), Kluwer Academic Publishers, Dordrecht, the Netherlands, 1994, pp. 119-232 (with S. L. Sclove and A. K. Gupta).



- [21] *Choosing the Number of Clusters, Subset Selection of Variables, and Outlier Detection in the Standard Mixture-Model Cluster Analysis*. Invited paper in **New Approaches in Classification and Data Analysis**, E. Diday et al. (Eds.), Springer-Verlag, New York, 1994, pp. 169-177.
- [22] *Issues in the Estimation and Application of Latent Structure Models of Choice*. Position paper in *Marketing Letters*, Vol. 5, No. 4, 1994, pp. 323-334 (with W. Dillon et al.).
- [23] *The Use of Information-Based Model Evaluation Criteria in the GMDH Algorithm*. Invited paper in *Systems Analysis, Modelling, and Simulation (SAMS)* in honor of Professor Alexander Ivakhnenko of the Ukrainian Academy of Sciences, Vol. 20, 1995, pp. 29-50 (with C. Hild).
- [24] *Inference Problems with Equivalent Models*. In *Advanced Structural Equation Modeling Techniques*, Lawrence Erlbaum Publishers, April 1995 (with L. J. Williams and L. Aiman-Smith).
- [25] *Empirical Econometric Modeling of Food Consumption Using a New Informational Complexity Approach*. Invited **world title award winning paper** in the *Journal of Applied Econometrics*, October 1997, Vol. 12, 563-592 (with Peter M. Barse, and Alan M. Schlottmann).
- [26] *Subset Selection in Vector Autoregressive Models Using the Genetic Algorithm with Informational Complexity as the Fitness Function*. Invited paper in *Systems Analysis, Modeling, Simulation (SAMS)*, 1998, Vol. 31, 61-91 (with Peter M. Barse).
- [27] *Informational Complexity Criteria for Regression Models*. *Computational Statistics and Data Analysis*, 1998, 28, 51-76 (with Dominique Haughton).
- [28] *Bayesian Factor Analysis Model and Choosing the Number of Factors Using a New Informational Complexity Criterion*. Invited paper in **Advances in Data Science and Classification**: Proceedings of the 6-th Conference of the International Federation of Classification Societies (IFCS-98), Universita "La Sapienza", Rome, Italy, July 1998, pp. 335-342 (with K. Shigemasu).
- [29] *Discussion of Session #40: Model Selection and Evaluation*. In **Bulletin of the International Statistical Institute**, 52<sup>nd</sup> Session, Book 3, Helsinki, 1999, 137-138.
- [30] *Akaike's Information Criterion and Recent Developments in Informational Complexity*. Invited paper in the Special Issue on Model in *Journal of Mathematical Psychology*, M. W. Brown, M., In J. Myung, M. Forster (Eds.), 2000, 62-91.
- [31] *Exploring Multivariate Modality by Unsupervised Mixture of Cubic B-Splines in 1-D Using Model Selection Criteria*. Invited paper in W. Gaul, O. Opitz, and M. Schader (Eds.), **Data Analysis: Scientific Modeling and Practical Application** in celebration of the 60<sup>th</sup> birthday of Professor Hans-Hermann Bock, Springer 2000, 105-119.
- [32] *Information Complexity-Based Regularization Parameter Selection for Solution of Ill-Conditioned Inverse Problems*. *Journal of Inverse Problems*, 2002 (with A. Urmanov, A.M. Grobik, J.W. Hines, and R.E. Uhrig). *Inverse Problems* **18** (2002) L1-L9.
- [33] *Multivariate Regressions, Genetic Algorithms, and Information Complexity: A Three-Way Hybrid*. Invited paper in **Measurement and Multivariate Analysis**, S. Nishisato, Y. Baba, H. Bozdoğan, and K. Kanefuji (Eds.), Proceedings of the International Conference on Measurement and Multivariate Analysis (ICMMA) and Dual Scaling, Springer Verlag, Tokyo, Japan, March 2002, pp. 269-278. (With Peter M. Barse).

- [34] *Regularized Kernel Discriminant Analysis with Optimally Scaled Data*. Invited paper in **Measurement and Multivariate Analysis**, S. Nishisato, Y. Baba, H. Bozdogan, and K. Kanefuji (Eds.), Proceedings of the International Conference on Measurement and Multivariate Analysis (ICMMA) and Dual Scaling, Springer Verlag, Tokyo, Japan, March 2002, pp. 133-144 (With Halima Bensmail).
- [35] *Information Complexity Criteria for Detecting Influential Observations in Dynamic Multivariate Linear Models Using the Genetic Algorithm*. Invited paper in the Special Issue of the *Journal of Statistical Planning and Inference (JSPI)* in celebration of the 80<sup>th</sup> birthday of Professor C.R. Rao, 2003, 114, 31-44, (with Peter M. Barse).
- [36] *The Informational Complexity Approach as a Criterion for Model Selection in Finance*. Invited paper in **Research in International Business and Finance**, Thomas Fetherston and Jonathan Batten (Eds.), Elsevier Publishing, 2003, Volume 17, 457-462, (with A. S. Dutta, C. M. Collins, and J. W. Wansley).
- [37] *RBF Neural Networks for Classification Using New Kernel Functions*. Invited paper in the Special Issue of *Neural, Parallel and Scientific Computations*, 11, 2003, 41-52, (with Zhenqiu Liu).
- [38] *Intelligent Data Mining with Information Complexity, Statistical Modeling, and Genetic Algorithms: A Three-Way Hybrid*. In **Statistical Data Mining & Knowledge Discovery**, H. Bozdogan (Ed.), Chapman & Hall/CRC, 2004, 15-56.
- [39] *Improving the Performance of Radial Basis Function (RBF) Classification Using Information Criteria*. In **Statistical Data Mining & Knowledge Discovery**, H. Bozdogan (Ed.), Chapman & Hall/CRC, 2004, 193- 216, (with Zhenqiu Liu).
- [40] *Kernel PCA for Feature Extraction with Information Complexity*. In **Statistical Data Mining & Knowledge Discovery**, H. Bozdogan (Ed.), Chapman & Hall/CRC, 2004, 309-322, (with Zhenqiu Liu).
- [41] *Ordinal Logistic Modeling Using ICOMP as a Goodness-of-Fit Criteria*. In **Statistical Data Mining & Knowledge Discovery**, H. Bozdogan (Ed.), Chapman & Hall/CRC, 2004, 353-371, (with Michael J. Lanning).
- [42] *Comments on "Model Identification From Many Candidates" and New Generation Information Criteria*. Commentary in **the Nature of Scientific Evidence: Statistical, Philosophical, and Empirical Considerations**, Mark L. Taper and S. R. Lele (Eds.), University of Chicago Press, 2004, 508-524. <http://www.press.uchicago.edu/cgi-bin/hfs.cgi/00/16313.ctl>
- [43] *Subsetting Kernel Regression Models Using Genetic Algorithm and the Information Measure of Complexity*. In **Classification, Clustering, and New Data Problems**, D. Banks, et al. (Eds), Springer-Verlag, 2004, 185-196, (with Xinli Bao).
- [44] *An Implicit Enumeration Algorithm for Mining High Dimensional Data*. Invited paper in the inaugural issue of the International Journal of Operations Research (IJOR), Vol. Nos. 1/2, 2005, 123-144, (with Xinli Bao, V. Chatpattananan, and Kenneth Gilbert).
- [45] *On the Choice of the Kernel Function in Kernel Discriminant Analysis Using Information Complexity*. Invited paper in **Data Analysis, Classification and Forward Search**, S. Zani, A. Cerioli, M. Riani, and M. Vichi (Eds.), Springer, 2006, 11-21, (with F. Camillo, and C. Liberati).

- [46] *Model Selection in Relevance Vector Machines (RVMs) Using Information Complexity and Genetic Algorithm (GA)*. In the book of **Classification and Data Analysis**, 2007, p. 51-60. Book of Short Papers of CLADAG-2007. (With Rui Zhang)
- [47] *MuFeSaC: Learning When to Use Which Feature Detector*. In the *Proc. of the IEEE International Conference on Image Processing*, Vol. VI, pp.149-152, 2007 (with S. R. Sukumar, H. Bozdoğan, D. L. Page, A. Koschan, M.A. Abidi).
- [48] *Sensor Selection Using Information Complexity for Multi-Sensor Mobile Robot Localization*. In the *Proc. of the International Conference in Robotics and Automation (ICRA)*, Rome, Italy, pp. 4158-4163, April **2007**. (with S. R. Sukumar, H. Bozdoğan, D. L. Page, A. Koschan, M.A. Abidi).
- [49] *Multivariate Regression Models with Power Exponential Random Errors and Subset Selection Using Genetic Algorithms with Information Complexity*. **Honorary** Invited Paper in European Journal of Pure & Applied Mathematics (EJPAM), Vol. 1, No. 1, p. 4-37, **2008**. (with Minhui Liu).
- [50] *Performance of Model Selection Criteria in Bayesian Threshold VAR (TVAR) Models*. Invited paper for the special issue of Econometric Reviews, 27(4-6) issues, **2008**. (with Y. Kwon, Y. and H. Bensmail).
- [51] *A Novel Data Adaptive Parameter and Kernel Selection in Kernel Discriminant Analysis (KDA) Using Information Complexity*. Journal of Pattern Recognition Research, **2009**, 119-132. (with Liberati, C., and Howe, A. J.)
- [52] *Predictive Subset VAR Modeling Using the Genetic Algorithm and Information Complexity*. Invited paper in H. Bozdoğan (Ed.), the SPECIAL ISSUE ON GRANGER ECONOMETRICS AND STATISTICAL MODELING DEDICATED TO THE MEMORY OF PROF. SIR CLIVE W.J. GRANGER of the **EUROPEAN JOURNAL OF PURE AND APPLIED MATHEMATICS**, Vol. 3, No. 3, **2010**, 382-405. (with Howe, A. J.)
- [53] *A New Class of Information Complexity (ICOMP) Criteria with an Application to Customer Profiling and Segmentation*. Invited paper to appear in the Journal of Business Administration, Istanbul University, Istanbul, Turkey, November, Vol. 39, No. 2, pp. 370-398, **2010**.
- [54] *Misspecification Resistant Model Selection Using Information Complexity with Applications*. Invited paper to appear in **New Perspectives in Statistical Modeling and Data Analysis**, S. Ingrassia, R. Rocci, M. Vichi Eds., Springer in the series *Studies in Classification, Data Analysis, and Knowledge Organization*, **2010**. (with Howe, J. A, Katragadda, S., and Liberati, C.)
- [55] *Structural Equation Modeling (SEM) of Categorical and Mixed-Data Using the Novel Gifi Transformations and Information Complexity (ICOMP) Criterion*. Invited Paper in the 40<sup>th</sup> Year Anniversary of the Journal of the School of Business Administration (JSBA), Vol. 40, No. 1, 86-123, **2011**. (with Deniz, E., and Katragadda, S.).
- [56] *Learning Factor Patterns in Exploratory Factor Analysis Using the Genetic Algorithm and Information Complexity as the Fitness Function*. Journal of Pattern Recognition Research (JPRR), 2, 230-249, **2011**. (with Yang, H.).
- [57] *Predictive Subset Selection Using Regression Trees and RBF Neural Networks Hybridized with the Genetic Algorithm*. **In Print in the** European Journal of Pure and Applied Mathematics (EJPAM), **2011**. (with Akbilgic, O.).

- [58] [Model Selection with Information Complexity in Multiple Linear Regression Modeling—Regression Modeling with ICOMP in R](#). In **Print in the Journal of Multiple Linear Regression Viewpoints (MLRV), 2011.** (with Yang. H.).

**Research Papers Submitted and Under Review in Refereed Journals/Proceedings:**

- [59] Liberati, C. and **Bozdogan, H.** *Information Complexity Approach to Gaussian Kernel Quadratic Discriminant Analysis for Supervised Learning*. **Submitted and under review in Advances in Data Analysis and Classification (ADAC).**
- [60] **Bozdogan, H.**, Baek, S., and Dai, Y. *Hybridized Support Vector Machine and Recursive Feature Elimination with Information Complexity*. **Submitted and under review in the Journal of Information Technology.**
- [61] Baek, S., Park, D. H., and **Bozdogan, H.** *Hybrid Kernel Discriminant Analysis Using Information Complexity and the Genetic Algorithm*. **Submitted and under review in the Journal of Classification.**
- [62] Akbilgic, O., **Bozdogan, H.**, and Balaban, M. E. *A Novel Hybrid RBF Neural Networks Model as a Forecaster*. **Submitted and under review in the Journal of Classification.**
- [63] Howe, J. A., and **Bozdogan, H.** *Simultaneous Model Selection in Multivariate Mixture-Model Cluster Analysis Using Information Complexity and the Genetic Algorithm:  $M^3$* . Invited book Chapter in H. Bozdogan (Ed.), **Multivariate Statistical Analysis and High-Dimensional Data Mining**, Chapman and Hall/CRC. **Under review to appear.**
- [64] Liberati, C., **Bozdogan, H.**, Campanini, R., and Masotti, M. *Probabilistic Discriminant Analysis in the Feature Space Using Information Complexity*. Invited book Chapter in H. Bozdogan (Ed.), **Multivariate Statistical Analysis and High-Dimensional Data Mining**, Chapman and Hall/CRC. **Under review to appear.**
- [65] Howe, J. A., and **Bozdogan, H.** *Regularized SVM Classification with Information Complexity and the Genetic Algorithm*. Invited book Chapter in H. Bozdogan (Ed.), **Multivariate Statistical Analysis and High-Dimensional Data Mining**, Chapman and Hall/CRC. **Under review to appear.**
- [66] Yan, L., and **Bozdogan, H.** *Robust And Misspecification Resistant Model Selection in Multiple Regression Models with Information Complexity and the Genetic Algorithms*. Invited book Chapter in H. Bozdogan (Ed.), **Multivariate Statistical Analysis and High-Dimensional Data Mining**, Chapman and Hall/CRC. **Under review to appear.**
- [67] Turan, E., and **Bozdogan, H.** *Bayesian Factor Analysis Using Information Complexity with Gibbs Sampling and Iterated Conditional Modes (ICM) Algorithms*. Invited book Chapter in H. Bozdogan (Ed.), **Multivariate Statistical Analysis and High-Dimensional Data Mining**, Chapman and Hall/CRC. **Under review to appear.**
- [68] Deniz, E., Kiroglu, G., and **Bozdogan, H.** *AIC and Information Complexity Type Model Selection Criteria in Measurement Models*. Invited book Chapter in H. Bozdogan (Ed.), **Multivariate Statistical Analysis and High-Dimensional Data Mining**, Chapman and Hall/CRC. **Under review to appear.**

**Papers in Completion for Submission:**

- [69] **Bozdogan, H.** *Akaike's Information Criterion (AIC)*. Invited Paper for **Wiley Computational Statistics**.
- [70] **Bozdogan, H.** *Model Selection*. Invited Paper for **Wiley Computational Statistics**.
- [71] **Bozdogan, H.**, and Howe, A. J. *The Curse of Dimensionality in Large-Scale Industrial Experiments Using a Novel Hybridized Dimension Reduction Approach*. **Technometrics**.
- [72] **Bozdogan, H.**, and Howe, A. J. *Misspecification Resistant Multivariate Regression Models Using the Genetic Algorithm and Information Complexity*. **Statistics and Computing**.
- [73] Deniz, E., Howe, J. Andrew, and **Bozdogan, H.** *Robustifying Structural Equation Modeling Against Nonnormality with Adaptive Kernels*. **Structural Equation Modeling**.
- [74] Xi, Chen and **Bozdogan, H.** *A Non-inferiority Trial Design Without the Need for a Conventional Margin*.

**Unpublished Working & Technical Papers:**

- *A Unified Approach to Information-Theoretic and Bayesian Model Selection Criteria* (with Maomi Uneno).
- *Multivariate Regression Models for Nonnormal Data: A New Model Selection Approach*.
- *Subset Selection in Bayesian Highest Predictive Density Vector Autoregressive Models Using the Genetic Algorithm* (with Peter M. Barse).
- *Combinatorial Cluster Analysis of Variables of High Dimensional Data* (with Stanley L. Sclove).
- *Choosing the Best Predictors in Regression Analysis via the Genetic Algorithm with Information Complexity as the Fitness Function* (with H-K Luh).
- *Expected Volume of the Confidence Region for the Mean Vector of the Multivariate Normal Distribution*.
- *Subset Selection of Predictors in Bayesian Regression Model Using a New Informational Complexity Criterion*.
- *Model Selection in Multivariate Nonlinear Regression Analysis of Compositional Data* (with Chen Xi).
- *Bayesian Confirmatory Factor Analysis (BCFA) Model as an Alternative to the Standard CFA Model with Applications* (with K. Shigemasu).
- *Informational Complexity Approach to Predictive Regression Models of Future Observations*.
- *A New Small Sample Corrections of Model Selection Criteria via Bartlett Adjustment*.
- *Multisample Cluster Analysis of Regression Models in K-Groups Using A New Complexity Criterion* (with Lu Su).
- *Bayesian Multisample Cluster Analysis of Regression Models in Several Groups Using A New Complexity Criterion*.
- *A New Information Theoretic Measure of Complexity Index for Model Evaluation in General Structural Equation Models with Latent Variables* (for Structural Equation Modeling Journal).



## ***Curriculum Vitae of Dr. Bozdogan***

- *Multisample Cluster Analysis of the Common Principal Component Model in K Groups Using Information Complexity* (for Journal of Statistical Computing & Data Analysis).
- *Image Enhancemet in Blind Deconvolution and Parameter Selection* (with S. L. Mahan and W. E. Blass).
- *Entropy Maximization Approach to Two-Sample Location.*
- *The Use of Information Criteria to Select Variables in Linear Models with Autocorrelated Error.*
- *Entropic Statistical Complexity, Final Estimation, and Matrix Norm Criteria for Model Selection* (with J. Rissanen).
- *Multivariate Logratio Linear Modeling of Compositional Data and Detection of Outliers.*
- *Choosing the Optimal Functional Form of a Model: The Box-Cox Transformation and Robust Regression.*
- *An Informational Approach to Variable Selection in Logistic Regression Models of Wildlife Habitat Use* (with F. van Manen and M. R. Pelton).
- *Phylogeny and Multivariate Correlated Traits: An Information-Based Approach* (with H-K Luh, J. L. Gittleman, and C. G. Anderson).

### **Algorithms Published:**

- *UTRANS and MTRANS: Marginal and Joint Box-Cox Transformations of Multivariate Data to 'Near' Normality*, Multivariate Behavioral Research, Computer Software, 1988, 23 (with D. E. Ramirez).

### **Unpublished Algorithms:**

- AICPARM: A General Purpose Program for Computing AICs for Univariate and Multivariate Parametric Models.

### **Technical Reports/Research Memorandum:**

1. *Multi-Sample Cluster Analysis Using Akaike's Information Criterion*, Technical Report No. 82-1, January 30, 1982, ONR Contract N00014-80-C-0408 (NR 042-443), Quantitative Methods Department, University of Illinois, Chicago, Illinois 60680 (with S. L. Sclove).
2. *Multi-Sample Cluster Analysis with Varying Parameters Using Akaike's Information Criterion*, Technical Report No. 8-2, March 8, 1982, ONR Contract N00014-80-C-0408 (NR 042-443), Quantitative Methods Department, University of Illinois, Chicago, Illinois 60680 (with S. L. Sclove).
3. *Determining the Number of Component Clusters in the Standard Multi-variate Normal Mixture Model Using Model-Selection Criteria*, Technical Report No. UIC/DQM/A83-1, June 16, 1983, ARO Contract DAAG29-820K-0155, Quantitative Methods Department, University of Illinois, Chicago, Illinois 60680.
4. *Multi-Sample Cluster Analysis as an Alternative to Multiple Comparison Procedures*, Technical Report No. UIC/DQM/A84-3, July 20, 1984, ARO Contract DAAG29-82-K0155, Department of Quantitative Methods, University of Illinois, Chicago, Illinois 60680.
5. *Model Selection Approach to the Factor Model Problem, Parameter Parsimony, and Choosing the Number of Factors*, Technical Report No. 1986 in Staistics, Department of Mathematics, University of Virginia (with D. E. Ramirez).

6. *ICOMP: A New Model-Selection Criterion for General Multivariate Input-Output Type Structural Models*, Technical Report No. 1987 (August 31) in Statistics, Department of Mathematics, University of Virginia.
7. *The Theory and Applications of Information-Theoretic Measure of Complexity (ICOMP) as a New Model-Selection Criterion*, Technical Report No. 1988 (March 15), University of Virginia and The Institute of Statistical Mathematics, Tokyo, Japan.

**Master's Students:**

1. James Syta, M.S.T. in Statistics, Department of Mathematics, University of Virginia, Charlottesville, Virginia, July, **1986**.
2. Eng Seng Teoh, M.S. in Statistics, The University of Tennessee, Knoxville, Tennessee, June , **1991**.
3. An Lu, M.S. in Statistics, The University of Tennessee, Knoxville, Tennessee, June, **1992**.
4. Yuehui Fan, M.S. in Statistics, The University of Tennessee, Knoxville, Tennessee, **1993**.
5. Joseph Kardos, M.S. in Statistics, The University of Tennessee, Knoxville, Tennessee, Summer **1994**.
6. Nathalie Manzor, M.S. in Statistics, The University of Tennessee, Knoxville, Tennessee, Fall **1994**.
7. Yiting Ding, M.S. in Statistics, The University of Tennessee, Knoxville, Tennessee, Spring **1997**.
8. Lu Su, M.S. in Statistics, The University of Tennessee, Knoxville, Tennessee, Summer **1999**.
9. Junghun Nam, M.S. in Statistics, , The University of Tennessee, Knoxville, Tennessee, May **2000**.
10. Yun Wang, M.S. in Statistics, The University of Tennessee, Knoxville, Tennessee, December **2000**.
11. Gao, Paul, M.S. in Statistics, The University of Tennessee, Knoxville, Tennessee, May **2001**.
12. Min, Kim, M.S. in Statistics, The University of Tennessee, Knoxville, Tennessee, May **2001**.
13. Yongjae Kwon, M.S. in Statistics, The University of Tennessee, Knoxville, Tennessee, May **2001**.
14. Michael J. Lanning, M.S. in Statistics, The University of Tennessee, Knoxville, Tennessee, May **2001**.
15. Derek Norton, M.S. in Statistics, The University of Tennessee, Knoxville, Tennessee, May **2001**.
16. Julie Ferrara Brown, M.S. in Statistics, The University of Tennessee, Knoxville, Tennessee, May **2003**.
17. Yan Liu, M.S. in Statistics, The University of Tennessee, Knoxville, Tennessee, May **2003**.
18. Ray Zhang, M.S. in Statistics, The University of Tennessee, Knoxville, Tennessee, May **2003**.
19. J. Andrew Howe, M.S. in Statistics, The University of Tennessee, Knoxville, Tennessee, May **2007**.
20. Jing Song, M.S. in Statistics, The University of Tennessee, Knoxville, Tennessee, May **2008**.
21. Fan Jiang, M.S. in Statistics, The University of Tennessee, Knoxville, Tennessee, May **2009**.
22. Lin Ge, M.S. in Statistics, The University of Tennessee, Knoxville, Tennessee, May **2009**.
23. Brant Quinton, M.S. in Statistics, The University of Tennessee, Knoxville, Tennessee, May **2009**.



24. Bahar Erar, M.S. in Statistics, The University of Tennessee, Knoxville, Tennessee, July **2011**.

**Doctoral Students:**

- [1] Dorothea Eisenblatter, University of Koln, West Germany, Co-supervisor, Ph.D., **1988**. Thesis title: *Two-Stage Multi-Sample Cluster Analysis as a General Approach to Discriminant Analysis*.
- [2] Chen Xi, Management Sciences, Ph.D. Supervisor in Statistics, The University of Tennessee. Title: *Model Selection in Nonlinear Regression Models*. December, **1996**.
- [3] Cheryl Hild, Management Sciences, Ph.D. Supervisor in Statistics, The University of Tennessee. Title: *The Development and Evaluation of Predictive Models Using Ivaknhenko's Polynomial Theory: GMDH*, July, **1998**.
- [4] Zhenqui Lui, Management Sciences, Ph.D. Supervisor in Statistics, The University of Tennessee. Title: *Intelligent Data Mining Using Kernel Functions and Information Criteria*, February, **2002**.
- [5] Xinli Bao, Management Science, Ph.D. Supervisor in Statistics, The University of Tennessee. Title: *Computational Statistical Model Selection Algorithms and Applications*. December, **2004**.
- [6] Caterina Liberati (Statistics, from the University of Bologna, Bologna, Italy) on *Regularized Kernel Discriminant Analysis with Information Complexity*. Co-Chair, March 2006.
- [7] Minhui Liu (**Management Science**), Ph.D. Supervisor in Statistics on: *Multivariate Nonnormal Regression Models, Information Complexity, and Genetic Algorithms: A Three Way Hybrid for Intelligent Data Mining*. October, **2006**. (Marketing Analyst, Warner Brothers, Los Angeles, CA.)
- [8] Yan Liu (**Statistics**) on *Robust Model Selection with Information Complexity and Genetic Algorithms*. August 2007. (Statistician, Commercial Markets Actuarial Department, Liberty Mutual Insurance Group, Boston, MA)
- [9] Rui Zhang (**Statistics**) on *Model Selection Techniques for Kernel-Based Regression Analysis Using Information Complexity Measure and Genetic Algorithms*. August 2007. (Biostatistician, Biostatistics Department, Global Clinical Operations, Research and Development Biogen Idec, Inc., Boston, MA)
- [10] J. Michael Lanning (**Statistics**) on *Information Criteria and Data Mining Visualization Using Kernelized Regression with GA and Decision Tree*. May 2008. (Statistician in Fisheries Statistics Office, National Marine Fisheries Service, Gloucester, MA)
- [11] Suman Katragadda (**Statistics**) on *Multivariate Mixed-Data Mining with Gifi System Using GA and ICOMP*. Fall 2008. (Statistical Research Analyst in the Strategic Resources Department at State Farm Insurance Company, Bloomington, IL)
- [12] Hongwei Yang (Co-Chair with Sky Huck) (**Educational Psychology**) *Learning Confirmatory Patterns in Exploratory Factor Analysis Using ICOMP and Genetic Algorithms*. May 2008. (Assistant Professor, School of Education, University of Kentucky, Lexington, KY.)

- [13] J. Andrew Howe (**Statistics**) on *A New Generation of Mixture-Model Cluster Analysis with Information Complexity and Genetic EM Algorithm*. May 2009. (CIO of Information Technology, Istanbul, Turkey)
- [14] Dong-Ho Park (Co-Chair with Sky Huck) (**Educational Psychology**) *Adaptive Kernel Discriminant Analysis Using Information Complexity Criterion and the Genetic Algorithm*. May 2009. (Lieutenant Colonel, Korean Military Academy, Director of Educational Placement, Seoul, Korea.)
- [15] Dennis Beal (Management Science-**Statistics**) on *Data Mining with Multivariate Kernel Regression Using Information Complexity and the Genetic Algorithm*. December 2009. (Statistician at ORNL, Oak Ridge, TN)
- [16] Esra Turan (**Statistics**) on *Mixtures of Factor Analyzers with Information Criteria and the Genetic Algorithm*. June 2010. (Statistical Analyst, Atlanta, Georgia)
- [17] Akbilgic, O. of the Quantitative Methods Department, Istanbul University, Ph.D. Thesis Co-Chair on *Predictive Subset Selection Using Hybridized RBF Neural Networks with Regression Trees*, December 2010. (Research Assistant, Istanbul University.)
- [18] Quinton, Brant, Expected **2013**.
- [19] Derek Norton, Expected **2013**.

**Doctoral & Masters Committees Served - Provided Problems and Solutions:**

1. *The Automated Partitioning of Simulations for Parallel Execution* by David M. Nicol Ph.D. in the Department of Computer Science, University of Virginia, **1985**.
2. *Information Theoretic Techniques Compared to F Tests and Likelihood Ratio Tests in One Factor ANOVA* by Elizabeth P. Rosenblum Ph.D. in the Department of Educational Research, University of Virginia, **1985**.
3. *Nuclear Magnetic Resonance Spectral Signatures of Liquid Crystals in Human Atheroma As Basis For Multi-Dimensional Imaging of Atherosclerosis* by Justin D. Pearlman, M.D., M.E., Ph.D. in the Division of Biomedical Engineering and Cardiology, University of Virginia, **1986**.
4. *Pattern Recognition of Magnetic Resonance Images with Application to Atherosclerosis* by Charles S. Carman, Ph.D. in the Division of Biomedical Engineering, University of Virginia, **1989**.
5. *A Causal Analysis of Large Vehicle Accidents Through Fault Tree Analysis and Statistical Modeling* by Sarath C. Joshua, Ph.D. in Civil Engineering, University of Virginia, **1989**.
6. *Clustering of Homogeneous Subsets* by Paul Garvey, M.S. in Systems Engineering (Masters Thesis), University of Virginia, **1990**.
7. *Controlling Information Systems Development: Escalation Behavior, Adverse Selection, and the Sunk Cost Effect* by Gary P. Schneider, Department of Accounting & Business Law, College of Business Administration, The University of Tennessee, Ph.D., **1993**.
8. *Black Bear Habitat Use Dynamics in the Southern Appalachians* by Frank Teunissen Van Manen, Department of Forestry, Wildlife, and Fisheries, The University of Tennessee, Ph.D., **1994**.

9. *Capacity Management in the Container Shipping Industry: The Application of Yield Management Techniques* by Dong Woo Ha, Department of Marketing, Logistics and Transportation, The University of Tennessee, Ph.D., Summer **1994**.
10. *Weights and Morphometrics of Black Bears in the Southeastern United States* by Thomas H. Eason, Department of Wildlife, Forestry & Fisheries, The University of Tennessee, M.S., **1995**.
11. *Habitat Ecology of Anolis Carolinensis in East Tennessee* by Jim Minesky, Department of Zoology, The University of Tennessee, Ph.D., Fall **1998**.
12. *Analytic Strategies for Data with Nonindependent Observations: Data Transformation, Structural Equation Modeling, and Information-Theoretic Criterion* by Carol Bruce, Child & Family Studies, The University of Tennessee, Ph.D., Spring **1999**.
13. *Stochastic Optimization Models for a Multipurpose Water Reservoir Capacity Planning Problem With Target-Priority Operation* by Nasreddine Saadouli, Management Science, The University of Tennessee, Ph.D., Spring **2000**.
14. *Instrument Performance Enhancement and Modification through an Extended Instrument Paradigm* by Stephen Lee Mahan, Physics Department, The University of Tennessee, Ph.D., Fall **2000**.
15. *Decomposition Techniques for Large Scale Stochastic Linear Programs* by Earl Ike Patterson, Management Science, The University of Tennessee, Ph.D., Spring **2001**.
16. *An Information Approach to Regularization Parameter Selection for Solution of Ill-Posed Problems Under Model Misspecification* by Aleksey M. Urmanov, Nuclear Engineering, The University of Tennessee, Ph.D., Spring **2002**.
25. Rasmussen, Brandon, Nuclear Engineering, The University of Tennessee, Ph.D., Spring **2003**.
26. Xiaoling Wang, Electrical & Computer Engineering, The University of Tennessee, Ph.D., Spring **2004**.
27. Vuttichai Chatpattananan, SOMS, The University of Tennessee, Ph.D., Spring **2004**.
28. Wicker, James. Physics Department, The University of Tennessee, Ph.D., Spring **2006**.
29. Monica Beals, Ecology, The University of Tennessee, Ph.D., **2006**.
30. Jiandong Zhou, Chemical Engineering, The University of Tennessee, Ph.D., **2007**.
31. Jan-Mou Li, Civil Engineering, The University of Tennessee, Ph.D., **2007**.
32. Justin Walguarney, Ecology, The University of Tennessee, Ph.D., **2007**.
33. Fahad Almutari, SOMS, **2007**.
34. Yi Yao, Electrical Engineering & Computer Science, **2008**.
35. Srinivasan. R. Sukumar, Electrical Engineering & Computer Science, **2008**.
36. Hong Chang, Electrical Engineering & Computer Science, **2008**.
37. Murali Rao, Plant Pathology, **2008**.
38. Jiawan, Materials Science, Engineering, **2008**.

39. Qiao, Dongchun Mary, Materials Science, Engineering, **2008**.
40. Hongwei Yang, Educational Psychology, **2008**.
41. Dong-Ho Park, Educational Psychology, **2009**.
42. David Hooper, Nuclear Engineering, **2011**.
43. Richard Edward, Computer Science, **2012**.

**Participation in Research Grants:**

**History of Grant Support/Funding:**

- ARO Contract DAA-29-83-K-0155, Quantitative Methods Department (S. L. Sclove), University of Illinois, Chicago, Illinois 60680, Faculty Associate during the summer of 1982, 1983, and 1984 to study *Statistical Models and Methods for Cluster Analysis and Image Segmentation*, **\$135,000**.
- (OSP) Office of Sponsored Programs Research Award, Program No. 13,337, Department of Mathematics, University of Virginia, Charlottesville, Virginia 22903, Principal Investigator, June 1, 1984 to May 31, 1985, to study *Model Selection Criteria in Biomedical Research*, **\$12,000**.
- (OSP) Office of Sponsored Programs Research Award, Program No. 13,337, Department of Mathematics, University of Virginia, Charlottesville, 22903, Principal Investigator, Project Period: 7/1/85 to 3/31/86, to study *The Use of AIC in M-Way Experimental Design Models*, **\$13,000**.
- Center for Advanced Studies Award to hold the *Advanced Symposium on Multivariate Statistical Modeling* at the Virginia Academy of Sciences Annual Meeting at James Madison University, Harrisonburg, Virginia, May 15-16, 1986, **\$3,000**.
- Academic Computing Support Program (ACSP) Funds to establish a *Statistical Computing Laboratory* (with S. James Taylor and Marvin Rosenblum), Office of the Associate Provost for Research, June 1987, **\$15,000**.
- Center for the Advanced Studies, Dean of the Faculty of Arts and Sciences, and Office of the Vice President and Provost Funds to host the *Second Conference of the International Federation of the Classification Societies (IFCS)*, University of Virginia, June 27-30, 1989, **\$10,000**.
- Visiting Research Fellowship Scientific Research Funds from the Ministry of Education, Science, and Culture of Japan under the contract with Professor Hirotugu Akaike, Director General of the Institute of Statistical Mathematics of Tokyo, Japan. Project period: 1/10/88 to 8/10/88, to study *Multivariate Statistical Modeling Problems*, **\$60,000**.
- (OSP) Office of Sponsored Programs Research Award, Program No. 13,337, Department of Mathematics, University of Virginia, Charlottesville, Virginia 22903, Principal Investigator, Project Period: 10/1/87 to 12/31/89 to study *Statistical Diagnosis of Cancer Types or Clusters: A New Entropy-Based Classification*, **\$10,000**.
- Department of Statistics and the College of Business Administration (CBA), The University of Tennessee funding for the First US/Japan Conference *On the Frontiers of Statistical Modeling: An Informational Approach*, contingency amount **\$25,000**.
- Research Administration, The University of Tennessee funding for the First US/Japan Conference *On the Frontiers of Statistical Modeling: An Informational Approach*, **\$5,000**.

- Computer-Based Instructional Materials (CBIM) award of the College of Business Administration, the University of Tennessee. Funded by the Ball Corporation Faculty Development Fund to develop *Computer-aided Symbolic Computational Modules in Multivariate Statistical Modeling*, January 1991-1994, **\$15, 500**.
- Principal investigator of the project: *Statistics Microcomputer Laboratory (SMCL)*. A three-way matching grant sponsored by the Division of Information Infrastructure (DII), College of Business Administration, and the Department of Statistics to establish a Statistics Microcomputer Laboratory (SMCL). Amount **\$110,000**.
- Principal investigator of the project: *International Conference on Bayesian Modeling: ISBA-97*. Sponsored by the National Science Foundation, Statistics and Probability Program DMS-9707364; June 1997-June 1998. Amount **\$9,900**.
- Principal Investigator of project: Software Technology Fee Request for Statistics MicroComputer Laboratory (SMCL). A two-way matching grant sponsored by the Division of Information Infrastructure (DII), and the Department of Statistics. Amount received: **\$5,000**.
- Co-Principal Investigator of project: *Distributed Data Mining Using Mobile Agents (DDMMA)*. Computational and Information Sciences Research Seed Grant Award Program. Summer 2001. Amount **\$10,000**.
- Co-Principal Investigator of project: *Ubiquitous Mining of Distributed, Heterogeneous, Dynamic Database over Logistical Networks*. Center for Information Technology Research (CITR) Challenge Grant (CG) award. Award period 2001-02. Amount **\$30,551**.
- Lead Statistician on the grant: *Bayesian Subsurface Radiological Surveying and Analysis*. Nuclear Regulatory Commission (NRC) R01-1086-049. Joint grant between ORNL and the Institute of Environmental Modeling (TIEM). Award period 2002-05. Amount **\$1 Million**.
- UT Research Office **\$5,000**; UT Science Alliance **\$5,000**; College of Business Administration (CBA) **\$5,000** as sponsors of the **International Conference on Multivariate Statistical Modeling and High Dimensional Data Mining (HDM-2008)** to be held in Kayseri, Turkey during June 19-23, 2008.
- **Senior UTK Lead Researcher and Principal Investigator** on the Proposal: **“Exploiting the Use of Social Networking to Facilitate Collaboration in the Scientific Community.”** together with a team of researchers from **Information International Associates (IIa), Inc.**, of Oak Ridge. Amount of the grant received: **\$554,769** from the U.S. Department of Energy Office of Science's Experimental Program to Stimulate Competitive Research (EPSCoR). One of the objectives of the grant is to create a system for scientific collaboration to be used across the research community. EPSCoR grant will support the team of Researchers at UTK, IIa, and ORNL, Graduate Assistants, and Post-Docs for three years. Budget Total of the award for UTK is **\$191, 855** for three years.

**Professional Development and Research Incentive Grant Awards:**

- Professional Development Award Fund, The Graduate School, The University of Tennessee, for the proposal: *Informational Complexity and Statistical Mixture-Model Cluster Analysis*, January 25, 1993, **\$2,000**.
- Scholarly Activities Incentive Fund (SAIF) Graduate Research Award for Cheryl Hild, Research Administration, The University of Tennessee, Spring 1994, **\$4,500**.
- SARIF Exhibit, Performance and Publication Expense Fund, Research Administration, The University of Tennessee, March 11, 1994. Three way matching in the amount of **\$3,000**.

- Professional Development Award Fund, The Graduate School, The University of Tennessee, for the proposal: *Multisample Cluster Analysis of Regression Models in Several Groups and Prediction of Performance*, January 25, 1995, **\$2,000**.
- Research Incentive Award of the Research Administration, The University of Tennessee, June 13, 1995, **\$1,000**.
- Research Incentive Award of the Research Administration, The University of Tennessee, October 2, 1996, **\$1,400**.
- Professional Development Award Fund, The Graduate School, The University of Tennessee, for the proposal: *Choosing the Best Predictors in Bayesian Regression Model Using the Genetic Algorithm with Informational Complexity as the Fitness Function*, January 14, 1997, **\$1,800**.
- A three-way matching Small-Grant Awards of the Office of Research of the University of Tennessee, to Co-Chair the Scientific Program of the 5-th Conference of the International Society for Bayesian Analysis (ISBA), Istanbul, Turkey, August 15-18, 1997, **\$3,000**.
- The University of Tennessee Professional Development Award for the proposal: *“Choosing the Best Predictors in Bayesian Regression Model Using the Genetic Algorithm with Informational Complexity as the Fitness Function,”* January 14, 1997-August 31, 1998. Evaluated and ranked among the 115 proposals submitted across the campus. Amount: **\$1,800**.
- Small-Grant Awards of the Office of Research of UTK, College of Business Administration, and the Department of Statistics to attend the 1998 Joint Statistical Meeting as a discussant, August 9-13, 1998 Dallas, Texas. Amount: **\$800**.
- Small grant award, Office of the Research of UTK, College of Business Administration, and the Department of Statistics. To present the results of *“Bayesian Factor Analysis Model and Choosing the Number of Factors Using a New Informational Complexity Criterion”* at the 6th Conference of the International Federation of Classification Societies (IFCS-98), Universita “La Sapienza”, Rome. July 21-24, 1998. Amount: **\$1,800**.
- UTK's Teaching with Technology Summer Institute's Award to explore new directions in teaching and learning by creating a modular piece of instruction that will be delivered on the Web. Amount: **\$2,000** (with Bill Blass).
- The University of Tennessee Professional Development Award for the proposal: *“A Unified Approach to Information-Theoretic and Bayesian Model Selection Criteria.”* January-August, 2000. Evaluated and ranked among the 115 proposals submitted across the campus. Amount: **\$2,400**.
- The University of Tennessee Professional Development Award for the proposal: *“Multivariate Regression Models for Nonnormal Data: A New Model Selection Approach.”* January 22, 1999-June 30, 2000. Evaluated and ranked among the 102 proposals submitted across the campus. Amount **\$1,800**.
- Small grant award, Office of the Research of UTK, College of Business Administration, and the Department of Statistics. To present the results of *“Misspecification Resistant Model Selection Using Information Complexity”* at the Session on *New Generation Model Selection Criteria and Their Applications* at the IMPS-2001 Conference at the University of Osaka, Osaka, Japan during July 15-19, 2001, and at the Matrix Algebra and Statistics Workshop, Voorburg, during August 1-4, 2001. Amount **\$2,400**.
- Technology Fee Funding of Statistics Micro-Computer Laboratory, ~**\$35,000**. Office of Information Technology.



### Scholarly Research Grant Program (SRGP) Awards:

- Scholarly Research Grant Program (SRGP) Awards of the College of Business Administration on proposal: *"Dynamic Linear Models for Forecasting Using Genetic Algorithm and Information Complexity."* Award period 1998-99, amount received: **\$12,500**.
- Scholarly Research Grant Program (SRGP) Awards of the College of Business on proposal: *"Is Beta Dead or Alive? Evidence Using a Mixture Model Clustering Approach."* Award period 2000-01, amount of award: **\$25,000** (with Deborah L. Gunthorpe Murphy).
- Scholarly Research Grant Program (SRGP) Awards of the College of Business on proposal: *"Misspecification Resistant Model Selection Using Information Complexity."* Award period 2001-02, amount of award: **\$11,500**.
- Haslam Teaching/Curriculum Innovation Program (HTCIP) proposal award of the College of Business Administration (CBA) on: *"Information Complexity & Multivariate Modeling: A World-Wide Webcast Course."* Award period 2002-03, amount of award: **\$8,000**.

### Unfunded Proposals:

- Principal Investigator of project: *Subset Vector Auto-regressive (VAR) Models Using the Genetic Algorithm with Information Complexity as the Fitness Function*. Sponsored by the National Science Foundation (NSF), Knowledge & Distributed Intelligence Program. Project Period: 3/1/1999 to 2/28/2002, proposed amount **\$643,610** (Dr. Peter M. Bearse, Co-Principal Investigator). Statistical Pattern Analysis, March 15, 2001. The amount of the proposal: ~ **\$3.5 million**.
- Principal Investigator : Small Center Proposal for a *Center for Integrative Research (CIRT)* on Information Complexity, Data Mining, Knowledge Discovery, and Statistical Pattern Analysis, March 15, 2001. The amount of the proposal: **\$3.5 million**.
- Co-Principal Investigator on Proposal: *Multi-Agent-based Distributed Data Mining (MADDM)*, NASA, Ames Research Center. Project Period: 01/01/2001 to 12/31/2003. The amount of the proposal: **\$748,725**.
- Co-Principal Investigator on Large Center Proposal for Center for Excellence, with Doug Birdwell and his co-workers at the Department of Electrical and Computer Engineering, October 2000. The amount of the proposal: **\$25 million**.
- *Co-Principal Investigator* of project: *Novel Algorithms and Computational Tools for the Analysis of Cancer Proteomics Data*. NSF, Project Period: 4 Years. (With Halima Bensmail, and University of Virginia Medical School, Norfolk, VA). In preparation. Amount **\$1.6 Million**.
- *Co-Principal Investigator* on the Proposal: *Novel Algorithms and Computational Tools for the Analysis of Large Data Sets in Astronomy and Neuroinformatics*. Project Duration: 3 Years. (With Halima Bensmail, and William E. Blass). Amount \$954,903. Submitted for funding to National Science Foundation (NSF).
- *Co-Principal Investigator* of project: *Novel Clustering & Classification Algorithms for High Dimensional Proteomics Data*. Project Period: 4 Years. (With Halima Bensmail, and University of Virginia Medical School, Norfolk, VA). Amount **\$978,370**. NSF: Information Technology Research Program.
- Lead Statistician on the grant: *Daily Image-Guided Adaptive Therapy for Prostate Cancer* for In Vivo Cancer Imaging Exploratory/Developmental Grants of NIH, PA-04-045. Jointly with Thompson Cancer Survival Center. Grant period 7/01/2006 through 6/30/2008. Amount **\$277,262**.



- IGERT: *Spatial Reliability Analysis in Nanoelectronics/Information Technology* Proposal to NSF. Participating Institutions/Organizations: University of Tennessee (UT), Pennsylvania State University (PSU), George Washington University (GWU), Georgia Institute of Technology (GATECH), Texas A&M University (TAMU), and Oak Ridge National Laboratory (ORNL), Co-PI, **\$3 Million**.
- Received funding from: UT Research Office **\$5,000**; UT Science Alliance **\$5,000**; College of Business Administration (CBA) **\$5,000** as sponsors of the **International Conference on Multivariate Statistical Modeling and High Dimensional Data Mining (HDM-2008)** to be held in Kayseri, Turkey during June 19-23, 2008.

**Conferences and Symposia Organized:**

- **Invited Session Chair** at the International Bayesian Learning Conference in Istanbul, Turkey during June 14-19, 2011.
- **Invited to Chair** Clustering and Classification Methods Session at the International Biostatistics Conference in Istanbul, Turkey during May 10-14, 2009.
- **Host & Chair** of the International Conference on Multivariate Statistical Modeling and High Dimensional Data Mining (HDM-2008) to furthering the international reach of UT to be held in Kayseri, Turkey, during June 19-23, 2008. <http://www.utk.edu/tntoday/article.php?pk=440>
- **International Program Committee member** of the International Workshop on Inductive Modeling IWIM'2007 will be held in Prague on September 23-26, 2007.
- **Scientific Program Committee** of the German Classification Society (Gesellschaft für Klassifikation - GfKI) for the 31st Annual GfKI Conference on "Data Analysis, Machine Learning, and Applications" which will take place at the University of Freiburg, in Freiburg, Germany, March 7-9, 2007.
- **International Program Advisory Board Member** of the **prestigious International Meeting of Psychometric Society (IMPS-2007)** which will be held at the University of Tokyo, in Tokyo, Japan during July 9-13, 2007.
- Chairman, *Statistical Modeling and Model Evaluation Symposium*, Annual Meeting of the Psychometric Society, Toronto, Canada, June 21-24, 1986.
- Chairman and host, *Advanced Symposium on Multivariate Statistical Modeling and Data Analysis*, Annual Meeting of ASA Virginia Chapter of the Virginia Academy of Sciences at James Madison University, Harrisonburg, Virginia, May 15-16, 1986.
- Chairman of the Organizing Committee and host, *Second Conference of the International Federation of the Classification Societies (IFCS)*, University of Virginia, June 27-30, 1989.
- Organizer: (1) *New Developments in Classification and Clustering*, and (2) *Model Selection In Covariance Structures* at the Joint Meeting of the Classification Society of North America (CSNA) and the Psychometric Society, Rutgers University, June 13-16, 1991.
- Organizer of invited Session on *Model Selection in Classification and Clustering* at the Third Conference of the International Federation of Classification Societies (IFCS)-1991, Heriott-Watt University, Edinburgh, Scotland, August 6-9, 1991.
- Director and host of the First US/Japan Conference on: *The Frontiers of Statistical Modeling: An Informational Approach*, University of Tennessee, Knoxville, TN, May 25-29, 1992.

- Co-Chair of the Scientific Program Committee of the International Society of Bayesian Analysis (ISBA) 1997 Istanbul, Turkey, August 15-18, 1997.
- Organizer of Invited Session on *Intelligent Multivariate Data Mining Using Genetic Algorithms and Information Complexity* at the CSNA-99 Annual Meeting at the University of Pittsburgh, June 10-13, 1999, Pittsburgh, PA.
- Organizer of Special Contributed Session on *Complexity, Information and Model Selection* at the Joint Statistical Meeting-99 in Baltimore, August 9-14, 1999.
- Organizer of *Current Issues in Mixture Model-Cluster Analysis* with Prof. Michel Wedel from the University of Groningen in the Netherlands at the International Federation of Classification Societies (IFCS) in Namur, Belgium during July 11-14, 2000.
- Organizer of the Session on *Information Theoretic Methods and Bayesian Modeling* at the International Society for Bayesian Analysis, 6<sup>th</sup> World Meeting, May 28-June 1, 2000, Hersonissos-Heraklion, Crete.
- Organizer of the Session on *Information Complexity, Multivariate Modeling, and Genetic Algorithms* at the International Conference on Measurement and Multivariate Analysis (ICMMA) and Dual Scaling, May 10-14, 2000, Banff Conference Center, Banff, Canada.
- Organizer/Chair of the Session on *New Generation Model Selection Criteria and Their Applications at the IMPS-2001* at the University of Osaka, Osaka, Japan during July 15 (Sunday) to July 19 (Thursday), 2001.
- Host and Conference Chair of *C. Warren Neel Conference on the New Frontiers of Statistical Data Mining, Knowledge Discovery, and E-Business Intelligence*, June 22-25, 2002.
- Organizer of the Session on *Optimization Methods and Algorithms in Classification and Clustering* at the 8<sup>th</sup> Conference of the International Federation of the Classification Societies (IFCS), July 15-19, 2002, Cracow, Poland.
- International Scientific Program Committee of the 9<sup>th</sup> Conference of the International Federation of the Classification Societies (IFCS), July 15-18, 2004, Chicago, Illinois.
- Scientific Program Committee of the International Workshop on *Feature Selection for Data Mining: Interfacing Machine Learning with Statistics* (FSDM-2005) during April 23, 2005, at Newport Beach, California.
- Co-Chair of Track #3: *Model Selection, Computational Methods, and Optimization Heuristics* at 3rd World Conference of the International Association for Statistical Computing (IASC) on *"Computational Statistics & Data Analysis"* in Limassol, Cyprus, during October 28-31, 2005.
- International Scientific Program Committee Member of the 3<sup>th</sup> International Conference "Inverse Problems: Modeling and Simulation", Fethiye, Turkey, May 29-June 2, 2006.
- Scientific Program Committee of the German Classification Society (Gesellschaft für Klassifikation - GfKI) for the forthcoming 31st Annual GfKI Conference on "Data Analysis, Machine Learning, and Applications" which will take place at the University of Freiburg, in Freiburg, Germany, during March 7-9, 2007.
- International Program Advisory Board Member of the prestigious International Meeting of Psychometric Society (IMPS-2007) which will be held at the University of Tokyo, in Tokyo, Japan during July 9-13, 2007.

- Appointed to the **International Program Committee** of the International Workshop on Inductive Modeling IWIM'2007 will be held in Prague on September 23-26, 2007.
- **Director and Host of the International Conference on Multivariate Statistical Modeling and High Dimensional Data Mining**, Erciyes University, Kayseri, Turkey, during June 2008.

**Invited & Keynote Lectures at Professional Societies/Universities:**

**1982** *Multi-Sample Cluster Analysis Using Akaike's Information Criterion*, Cluster Analysis Session, American Mathematical Society's 789th Meeting, University of Massachusetts, Amherst, October 17-18, 1982.

**1985** *Determining the Number of Component Clusters in the Standard Multivariate Normal Mixture Model Using Model-Selection Criteria*, Department of Statistics Colloquium, VPI & State University, Blacksburg, Virginia, May, 1985.

*Multi-Sample Cluster Analysis as an Alternative to Multiple Comparison Procedures*, The 9th Annual Meeting of the German Classification Society, University of Karlsruhe, Karlsruhe, West Germany, June 26-28, 1985.

*Model Selection Approach to the Factor Model Problem, Parameter Parsimony, and Choosing the Number of Factors*, Fourth European Meeting of the Psychometric Society and the Classification Societies, Cambridge, England, July 2-5, 1985.

*Determining the Number of Component Clusters in the Standard Multivariate Normal Mixture Model Using Model-Selection Criteria:*

Department of Mathematics and Statistics Colloquium, Bowling Green State University, Bowling Green, Ohio, September 1985,

**1986** Bell Communications Research Laboratories, Morristown, New Jersey, April, 1986, and

Department of Mathematics and Statistics, State University of New York at Albany, New York, April, 1986.

*Model Selection and Akaike's Information Criterion (AIC), The General Theory and Its Analytical Extensions*, Statistical Modeling and Model Evaluation Symposium, invited by the President of Psychometric Society, Annual Meeting of the Psychometric Society, Toronto, Canada, June 21-24, 1986.

**1988** *Simultaneous Model Selection in Combinatorial Multisample Cluster Analysis and Subset Selection of Variables Using AIC*, Institute of Statistical Mathematics Colloquium, Tokyo, 106, Japan, invited by Professors Ohsumi and Akaike, February 12, 1988.

*Choosing the Number of Clusters in the Population Mixture Model Using Model Selection Criteria*, Institute of Statistical Mathematics Colloquium, Tokyo, 106, Japan, invited by Professors Ohsumi and Akaike, February 26, 1988.

*The Theory and Applications of Information-Theoretic Measure of Complexity as a New Model-Selection Criterion:*

Department of Mathematics Statistics Colloquium, Faculty of Science, Hiroshima University, Hiroshima 730, Japan, invited by Prof. Y. Fujikoshi, March 27-29, 1988,

Department of Mathematics Statistics Colloquium, University of Tsukuba, Tsukuba, 305, Japan, invited by Prof. N. Sugiura, April 21-24, 1988,

Institute of Statistical Mathematics Colloquium, Tokyo, 106, Japan, invited by Prof. K. Tanabe, June 1, 1988, Department of Applied Mathematics Statistics Colloquium, Faculty of Science, Science University of Tokyo, 162, Japan, invited by Prof. M. Siotani, June 10, 1988,

Department of Mathematics and Computer Science Statistics Colloquium, Keio University, Yokohama, 223, Japan, invited by Profs. R. Shibata and Sibuya, July 12, 1988.

*Model Selection Approach to the Factor Model Problem, Parameter Parsimony, and Choosing the Number of Factors*, Statistics Colloquium of the Research Division, The National Center for University Entrance Examination, Tokyo, Japan, invited by Prof. H. Yanai, May 10, 1988.

*Information Theoretic Complexity of the Inverse-Fisher Information Matrix as a New Criterion for Multisample Cluster Analysis*, the Fifth Japan and Korea Joint Conference of Statistics, Tokyo, Japan, invited by Prof. N. Ohsumi, July 17-19, 1988.

*Finite Mixture Models for Cluster Analysis of Grouped Data*, Japanese Classification Society, the Institute of Statistical Mathematics, Tokyo, 106, Japan, invited by Prof. N. Ohsumi, July 23, 1988.

*On the Information-Based Measure of Covariance Complexity and its Application to the Evaluation of Multivariate Linear Models:*

Multivariate Session of the Japan Statistical Society, Fukushima University, Fukushima, Japan, invited by Prof. S. Konishi, July 25-27, 1988, Department of Mathematics, University of Lowell, Lowell, Massachusetts, invited by Prof. Dominique Haughton, March, 1989, and

Department of Statistics, VPI, Blacksburg, Virginia, April 26, 1990.

**1989** *Information Theoretic Complexity of the Inverse-Fisher Information Matrix as a New Criterion for Multisample Cluster Analysis*, Second International Federation of Classification Societies (IFCS) 1989, University of Virginia, June 27-30, 1989.

*Theory and Applications of Information-Based Measure of Complexity in Bayesian Confirmatory Factor Analysis:*

**1990** Symposium on Goodness of Fit Procedures at the American Educational Research Association (AERA), April 16-20, 1990, Boston, MA, and

Statistics Day at the University of Lowell, April 21, 1990, Lowell, MA.

*On a New Information-Based Statistical Complexity Criterion for Model Selection and Its Applications to the Evaluation of General Linear Models,*

Division of Statistics, University of New York at Albany, Albany, NY, November 5, 1990.

*Multisample Cluster Analysis of the Common Principal Component Model in K Groups Using Entropic Statistical Complexity Criteria*, International Symposium on Theory and Practice of Classification in Pushchino, Soviet Union, December 16-19, 1990.

**1991** Seminar/Workshop on *Information-Based Model Selection Criteria*, Faculty & Doctoral Students in Marketing, Logistics and Transportation, UTK, January-April, 1991.

*Japanese Viewpoint of Statistical Science*, Sigma Mu Alpha Statistics Society, Department of Statistics, UTK, February, 1991.

*Choosing the Number of Component Clusters in the Mixture Model Using A New Information Theoretic Complexity Criterion of the Inverse-Fisher Information Matrix;*

*A New Information Theoretic Measure of Complexity Index for Model Evaluation in General Structural Equation Models With Latent Variables;*

*A Theory-Based Method for Small Factor Analysis and Choosing the Number of Factors* (with R. M. Pruzek);

*Bayesian Confirmatory Factor Analysis (CFA) Model As An Alternative to the Standard CFA Model With Applications* (with K. Shigemasu);

All at the Joint Meeting of the Classification Society of North America and Psychometric Society, Rutgers the State University, New Brunswick, June 1991.

*Choosing the Number of Component Clusters in the Mixture Model Using A New Information Theoretic Complexity Criterion of the Inverse-Fisher Information Matrix*, Third Conference of the International Federation of Classification Societies, Edinburgh, Scotland, August 6-9, 1991.

*A New Information Theoretic Measure of Complexity Index for Model Evaluation in General Structural Equation Models With Latent Variables*, Center for Econometric Research, University of Tilburg, Tilburg, the Netherlands, August, 1991.

- 1992** *A New Information Theoretic Measure of Complexity Index for Model Evaluation in General Structural Equation Models with Latent Variables*. At the 1992 Winter Marketing Educator's Conference in the "Theory Evaluation and Testing Track", in San Antonio, Texas, during February 15-18, 1992.

*Choosing the Number of Component Clusters in the Mixture-Model Using A New Informational Complexity Criterion of the Inverse-Fisher Information Matrix*.

At the 16th Annual Meeting of the German Classification Society in Studies in Classification, Data Analysis, and Knowledge Organization, the University of Dortmund, Dortmund, Germany, during April 1-3, 1992.

- 1993** *Bayesian Factor Analysis and Choosing the Number of Factors Using a New Informational Complexity Criterion*, invited paper presented at the First Multinational Riverboat Conference on Bayesian Econometrics and Statistics, University of Basel, Switzerland, April 31-May 4, 1993.

*Current Research Issues in Mixture-Model Cluster Analysis*. Invited to speak at Duke Invitational Symposium on Choice Modeling: Workshop on Latent Structure and Latent Variable Choice Modeling. Duke University, July 28-August 1, 1993.

*Choosing the Number of Clusters, Subset Selection of Variables, and Outlier Detection in the Standard Mixture-Model Cluster Analysis*. Invited paper presented at the Fourth Conference of the International Federation of the Classification Societies (IFCS), Paris, France, August 31-September 3, 1993.

*Computer-Based Instruction in Multivariate Statistical Modeling With MATLAB: A New Informational Complexity and Model Selection Approach*. Presented at the 1993 MATLAB Users Conference, Cambridge, Massachusetts, October 18-20, 1993.

- 1994** *Bayesian Factor Analysis Model and Choosing the Number of Factors Using a New Informational Complexity Criterion*. Invited paper presented at the Research Methodology Development on Causal Modeling, Krannert Graduate School of Management, Purdue University, West Lafayette, March 3-5, 1994.

*Subset Selection of Predictors in Bayesian Regression Model Using a New Informational Complexity Criterion*. Presented at the 5th Valencia International Meeting on Bayesian Statistics, Alicante, Spain, June 5-9, 1994.



*Bayesian Factor Analysis Model and Choosing the Number of Factors Using a New Informational Complexity Criterion.* Invited paper presented at the Second International Society of Bayesian Analysis in the Session: Information-theoretic Modeling, Alicante, Spain, June 10-11, 1994.

*Three-Based Classification of Predictors in Regression-Type Models Via Self-Organization: The GMDH Algorithm* (with C. R. Hild); and

*A Correlated Evolution Model Using a Multiple Regression with Phylogenetically Autoregressive Error Components* (with H-K. Luh).

- 1995** Invited papers at the Classification Society of North America's (CSNA's) Annual Conference, University of Colorado, Denver, Colorado, during June 22-25, 1995.

*Mixture-Model Cluster Analysis Using Model Selection Criteria and a New Informational Measure of Complexity.* Invited paper at the International Workshop on Statistical Mixture Models, Aussois, France, during September 17-21, 1995.

*Informational Complexity Approach to Predictive Regression Models of Future Observations;* and

*Bayesian Multisample Cluster Analysis of Regression Models in Several Groups Using a New Informational Complexity Criterion.*

Invited paper at the Third World Meeting of the International Society of Bayesian Analysis (ISBA-95), Oaxaca, Mexico, during September 29-30, 1995.

*Univariate Mixture of Cubic B-Splines Approach to Detecting Multivariate Modality Using Model Selection Criteria.*

- 1996** Invited paper at the Fuzzy & Probabilistic Methods for Clustering at the 5-th Conference of the International Federation of Classification Societies (IFCS-96) Kobe, Japan, during March 27-30, 1996.

*A New Informational Complexity Criterion for Model Selection: The General Theory and Its Applications.*

Invited paper at the Information Theoretic Models & Inference of the Institute for Operations Research and the Management Sciences (INFORMS), Washington D. C., during May 5-8, 1996.

*Informational Complexity Approach to Predictive Regression Models of Future Observations.* Paper presented at the Joint Research Conference on Statistics in Quality, Industry, and Technology, National Institute of Standards and Technology, Gaithersburg, MD, during May 29-31, 1996.

*Informational Complexity for Regression Models.* Special contributed paper presented at the Information Theory and Statistics Symposium of the 156th Annual Meeting of the American Statistical Association, Chicago, Illinois, during August 4-8, 1996.

- 1997** *Image Enhancemet in Blind Deconvolution and Parameter Selection.* Invited paper presented at Classification Society of North America 1997 Annual Meeting, American University, Washington D.C., during June 12-15, 1997.

*A New Informational Complexity Criterion for Model Selection: The General Theory and Its Applications.* Invited paper presented at the Southern Regional Committee on Statistics (SRCOS)/American Statistical Association, Gatlinburg, Tennessee, during June 19-21, 1997.

*Subset Selection in Vector Autoregressive Models Using the Genetic Algorithm and the Informational Complexity as the Fitness Function.* Invited paper presented at the Computational Intensive Statistical Methods Workshop, Utah State University, Logan, Utah, during July 25-27, 1997.

*Akaike's Information Criterion and Recent Developments in Informational Complexity.* Invited paper presented at the Special Symposium on Methods for Model Selection, 30th Annual Mathematical Psychology Meeting, Indiana University, Bloomington, Indiana, during August 3-4, 1997.

*Subset Selection in Bayesian Highest Predictive Density Vector Autoregressive Models Using the Genetic Algorithm.* Invited paper presented at the Session on Bayesian Multivariate Analysis and Model Selection, The 5-th World Meeting of the International Society for Bayesian Analysis (ISBA), Istanbul, Turkey, during August 15-18, 1997.

- 1998** *Variable Selection in Bayesian Regression Model Using the Genetic Algorithm and Informational Complexity.* Invited paper presented at the 6th Valencia International Meeting on Bayesian Statistics, Las Fuentes, Spain, during May 30-June 4, 1998.

*Bayesian Factor Analysis Model and choosing the Number of Factors Using a New Informational Complexity Criterion.* Invited paper presented at the 6th Conference of the International Federation of Classification Societies (IFCS-98), Universita "La Sapienza", Rome. July 21-24, 1998.

*Information Complexity Criteria for Detecting Influential Observations in Dynamic Multivariate Linear Models Using the Genetic Algorithm.*

- 1999** Invited paper presented at the 23<sup>rd</sup> Conference of the German Classification Society, University of Bielefeld, March 10-12, 1999, Bielefeld, Germany, and

Invited paper presented in the Invited Session on *Intelligent Multivariate Data Mining Using Genetic Algorithms and Information Complexity* at the CSNA-99 Annual Meeting at the University of Pittsburgh, June 10-13, 1999, Pittsburgh, PA.

Invited paper presented at the Special Contributed Session on: *Complexity, Information and Model Selection* at the Joint Statistical Meeting-99 in Baltimore, during August 9-14, 1999. *Combinatorial Cluster Analysis of Variables of High Dimensional Data Using the Genetic Algorithm and Information Complexity Criteria as the Fitness Function.* CSNA-99 Annual Meeting at the University of Pittsburgh, June 10-13, 1999, Pittsburgh, PA.

*Multivariate Regression Models for Nonnormal Data: A New Model Selection Approach.* Paper presented at the 52nd Session of ISI in Helsinki, Finland during August 10-18, 1999. Also served as the discussant of the Invited Paper Session on Model Selection.

- 2000** *Multivariate Regressions, Genetic Algorithms, and Information Complexity: A Three-Way Hybrid.* Invited paper presented in the Session on *Information Complexity, Multivariate Modeling, and Genetic Algorithms* at the International Conference on Measurement and Multivariate Analysis (ICMMA) and Dual Scaling, May 10-14, 2000, Banff Conference Center, Banff, Canada.

*A Unified Approach to Information-Theoretic and Bayesian Model Selection Criteria.* Invited paper presented in the Session on *Information Theoretic Methods and Bayesian Modeling* at the International Society for Bayesian Analysis, 6<sup>th</sup> World Meeting, May 28-June 1, 2000, Hersonissos-Heraklion, Crete.

*Intelligent Data Mining Using Mixture-Model Cluster Analysis and a New Information Measure of Complexity.* Invited paper presented at the *Current Issues in Mixture Model-Cluster Analysis* Invited Session Organizer with Prof. Michel Wedel from the University of Groningen in the Netherlands at the International Federation of Classification Societies (IFCS) in Namur, Belgium during July 11-14, 2000.

- 2001** *Multivariate Regressions, Genetic Algorithms, and Information Complexity: A Three-Way Hybrid.* Invited Speaker at the Colloquium jointly sponsored by the Department of Psychology, Quantitative



Analysis Division and the Department of Materials Science and Engineering of the Ohio State University, Friday Nov. 17, 2001, Columbus, Ohio.

*Multivariate Regressions, Genetic Algorithms, and Information Complexity: A Three-Way Hybrid.* Special Invited Talk at the 25<sup>th</sup> Annual Meeting of the Society for Industrial and Applied Mathematics (SIAM) Southeastern Atlantic Section (SEAS) at Coastal South Carolina University, Conway, South Carolina, March 16-17, 2001.

*Regularized Supervised Classification with Optimally Scaled Data.* Invited talk at the Special Session on Mathematical Statistics, Reliability Theory at the 25<sup>th</sup> Annual Meeting of the SIAM-SEAS at Coastal South Carolina University, Conway, South Carolina, March 16-17, 2001. (With Halima Bensmail.)

Statistical Data Mining and Automatic Model Generation Using InfoCube, Genetic Algorithms and Information Complexity: A Three-Way Hybrid. *Invited Poster Presentation at the SAP America International Conference, San Diego, California, during February 25.*

*Vector Autoregressive (VAR) Forecasting Using the Genetic Algorithm (GA) with Information Complexity as the Fitness Function.* Invited talk at the Special Session on Mathematical Statistics, Reliability Theory at the 25<sup>th</sup> Annual Meeting of the SIAM-SEAS at Coastal South Carolina University, Conway, South Carolina, March 16-17, 2001. (With Peter M. Bearse.)

*Supervised and Unsupervised Clustering for Mixed Data.* Invited paper presented at the Session on *New Generation Model Selection Criteria and Their Applications* at the **IMPS-2001** at the University of Osaka, Osaka, Japan during July 15 (Sunday) to July 19 (Thursday), 2001. (With Halima Bensmail.)

*The Role of the Genetic Algorithm in Multivariate Modeling Using Information Complexity.* Invited paper presented at the Session on *New Generation Model Selection Criteria and Their Applications* **at the IMPS-2001** at the University of Osaka, Osaka, Japan during July 15 (Sunday) to July 19 (Thursday), 2001. (With Peter M. Bearse.)

*Misspecification Resistant Model Selection Using Information Complexity.* Invited paper presented at the Session on *New Generation Model Selection Criteria and Their Applications* at the **IMPS-2001** at the University of Osaka, Osaka, Japan during July 15- 19, 2001. (With Jan R. Magnus)

*Supervised and Unsupervised Clustering for Mixed Data.* Invited paper presented at the Matrix Algebra and Statistics Workshop, Voorburg, during August 1-4, 2001. (With Halima Bensmail.)

*Misspecification Resistant Model Selection Using Information Complexity.* Invited paper presented at the Matrix Algebra and Statistics Workshop, Voorburg, during August 1-4, 2001. (With Jan R. Magnus)

**2002** *A New Generation Multivariate Mixture-Model Cluster Analysis of Normal and Non-Normal Data Using Information Measure of Complexity.* Invited paper presented at the 8<sup>th</sup> Conference of the International Federation of the Classification Societies (IFCS), July 15-19, 2002, Cracow, Poland.

*EM Algorithms for Multivariate Kernel Mixture-Model Cluster Analysis for Mixed Data.* Invited paper presented in the Session on *Optimization Methods and Algorithms in Classification and Clustering* at the 8<sup>th</sup> Conference of the International Federation of the Classification Societies (IFCS), July 15-19, 2002, Cracow, Poland. (With Halima Bensmail.)

*Misspecification Resistant Model Selection Using Information Complexity.* Invited paper presented at the Workshop on Reduction of Complexity, Trade-Off, and Methods at the University of Dortmund, Germany, during Nov. 14-15, 2002.

*A New Generation Multivariate Mixture-Model Cluster Analysis of Normal and Non-Normal Data Using Information Measure of Complexity.* Invited paper presented at the Department of Statistics, University of California Riverside, Dec. 3, 2002, Riverside, CA.

*Modern Statistical Tools for Financial Market Analysis.* Invited presentation to Golden Gate Financial Group, during Dec. 4-6, San Francisco, CA. Dec. 5, 2002.

**2003** *A New Bayesian Information Complexity and Model Selection Criteria.* Invited paper presented at the 13-th International Meeting and the 68-th American annual meeting of the Psychometric Society (IMPS-2003), Chia Laguna, Cagliari, Italy, during July 7-10, 2003.

*Robust and Misspecification Resistant Model Selection with Information Complexity and Genetic Algorithms.* Invited paper presented at the Euro-Informs Conference, Istanbul, Turkey, July 9-10, 2003.

*Bayesian Unsupervised Clustering for Mixed Data with Missing Observations.* Paper presented at the Joint Statistical Meetings, August 3-7, 2003, San Francisco, CA.

*Bayesian Unsupervised Clustering for Mixed Data with Missing Observations* Plenary Speaker at CLADAG-2003: Italian Classification Society Conference, attended by 350 participants from Italy, France, Germany, the Netherlands, Austria, and the U.S.

*Bayesian Analysis of Threshold Vector Autoregressive (TVAR) Models.* Invited paper presented at the IEE Conference in honor of Prof. Arnold Zellner, American University, Washington D.C., September 19-20, 2003.

*Intelligent Statistical Data Mining with Information Complexity and Genetic Algorithms.* Invited Session Speaker at the SAS M2003 Data Mining Technology Conference in Las Vegas, Nevada, October 13-14, 2003.

**2004** *Regularized Regression Trees and RBF Networks, Subset Selection of Best Predictors, and Genetic Algorithms with Information Measure of Complexity.* Invited paper presented at the International Conference on "Inverse Problems: Modeling and Simulation," Fethiye, Turkey, during June 7-12, 2004.

*A New Bayesian Information Complexity and Model Selection Criteria.* Invited paper presented at the 28<sup>th</sup> Conference of the German Classification Society (GfKI-2004), University of Dortmund, Dortmund, Germany, during March 9-11, 2004.

*A New Generation Multivariate Mixture-Model Cluster Analysis of Normal and Non-Normal Data Using Information Measure of Complexity.* Invited talk at the University of North Carolina at Greensboro, N.C., during April 2, 2004.

*Intelligent Statistical Data Mining with Information Complexity and Genetic Algorithms.* Invited Main Speaker of 2003-04 Academic Year, College of Charleston, Charleston, S.C., during April 12-14, 2004.

**2005** *Modeling Problems in Micro Data Mining and New Methodologies with Information Complexity.* Invited paper presented at the Fifth Scientific Meeting of the CLAsification and Data Analysis Group (CLADAG) at the Faculty of Economics of the University of Parma, in Parma, Italy during June 6-8, 2005.

*Bayesian Analysis of Threshold Autoregressive Models with Information Complexity.* Invited paper presented at the *Linear and Non-Linear Dynamics in Time Series Workshop* in Bressanone, Italy during June 9-11, 2005 sponsored by Università di Padova, Padova, Italy.

*Bayesian Analysis of Threshold Autoregressive Models with Information Complexity*. Invited paper presented at the *Nonstationary and Nonlinear Time-Series Models* at the Joint Statistical Meetings in Minneapolis, Minnesota during August 7-11, 2005.

*Robust and Misspecification Resistant Multivariate Regression Models Hybridized with Genetic Algorithms and Information Complexity*. Contributed paper presented at the *Econometric Methods and Applications* (with Yan Liu) at the Joint Statistical Meetings in Minneapolis, Minnesota during August 7-11, 2005.

*A New Bayesian Information Complexity and Model Selection Criteria*. Invited paper presented at the Second Conference on Information and Entropy Econometrics, American University, September 23-25, 2005.

*A New Bayesian Information Complexity and Model Selection Criteria*. Paper presented at the SOMS Colloquium Series, November 11, 2005.

**2006** *Intelligent Statistical Data Mining with Information Complexity and Genetic Algorithms*. The 2006 Eugene Lukacs Distinguished Lectures of the Mathematics & Statistics Department at Bowling Green State University, in Bowling Green, Ohio, March 19-24, 2006.

*Choosing the Optimal Kernel Function in Regularized Kernel Discriminant Analysis Using Information Complexity*. Invited paper presented at the Third International Conference on "**Inverse Problems; Modeling and Simulation**" in Fethiye, Turkey where he talked on: ". He also served on the International Program Committee of this Conference during May 29-June 3, 2006.

*A Novel Mixture-Model Cluster Analysis with Genetic EM Algorithm and Information Complexity as the Fitness Function*. One of the eight invited speakers at the Tenth Conference of the International Federation of Classification Societies (IFCS-2006) in Ljubljana, Slovenia, during July 25-29, 2006.

*A New Generation Mixture-Model Cluster Analysis Using Information Complexity and Genetic Algorithms*. Keynote lecture at the International **Workshop on Knowledge Extraction and Modeling** on the Island of Capri, Italy, during September 2-10, 2006.

*Information Complexity Criterion, Multivariate Learning in High-Dimensions, and Genetic Algorithms*. Delivered Graduate Seminar to Ph.D. students at the University of Naples Federico II, in Naples, Italy at the Computational Statistics: "Knowledge Extraction and Decision Making" Symposium. Participants addressed the most recent advances and future challenges in analyzing "complex systems of data" in which analytical difficulty extends beyond having huge masses of data to include the complex structure of the data's relationships, during September 2-10, 2006.

**2007** **Invited speaker:** Sukumar, S.R., **Bozdogan, H**, Page, D.L., Koschan A.F., and Mongi, A.A. *Sensor Selection Using Information Complexity for Multi-Sensor Mobile Robot Localization*. Invited to appear in 2007 IEEE International Conference on Robotics and Automation (ICRA'07), Rome, Italy.

SOMS Departmental Seminar talk on *Model Selection in Bayesian Relevance Vector Machines (BRVMs) in Regression and Classification Using Information Complexity and Genetic Algorithm*, November 9, 2007.

**Keynote lecture on** *Model Selection in Relevance Vector Machines (RVMs) Using Information Complexity and Genetic Algorithm (GA)* and a tutorial lecture to doctoral students on *The General Theory and Applications of New Information Complexity ICOMP Class Criteria for Model Selection* at the Italian Statistical Society's CLASSification and Data Analysis Group (CLADAG-2007) at the University of Macerata in Macerata, Italy during Sept

10-14, 2007 at their biannual European Conference. The audience included over 100 Italian Statisticians and 50 Italian doctoral students.

**Gave two tutorial lectures** on *Information Complexity ICOMP Class of Criteria* to the Italian doctoral students at the Department of Statistics of the University of Bologna in Bologna, Italy during Sept 17-18, 2007. The audience included over 25 Italian doctoral students. *A New Generation Mixture-Model Cluster Analysis Using Information Complexity and Genetic Algorithms*. Invited lecture at the 5th Congress of the Turkish Statistical Society in Antalya, Turkey during May 20-24, 2007. The audience included 500 Turkish Statisticians.

*Intelligent Statistical Data Mining with Information Complexity and Genetic Algorithms*. Invited lecture in the Department of Statistics at Mimar Sinan University, Istanbul, Turkey, May 27, 2007. The audience included 50 doctoral students and faculty.

*High Dimensional Data Mining under Misspecification Using Genetic Algorithm and Information Complexity*. Invited lecture in the Department of Department of Electrical and Electronics Engineering of Erciyes University in Kayseri (Cesarea), Turkey, May 29, 2007.

**2008** **Keynote lecture on** *Simultaneous Model Selection in Multivariate Mixture-Model Cluster Analysis Using Information Complexity and the Genetic Algorithm:  $M^3$*  at the International Conference on Multivariate Statistical Analysis and High Dimensional Data Mining (HDM-2008), Kayseri, Turkey, June 19-23, 2008.

**Invited speaker on:** Caterina Liberati, **H. Bozdogan**, R. Campanini, M. Masotti. *Probabilistic Discriminant Analysis in the Feature Space Using Information Complexity*. Invited talk at the International Conference on Multivariate Statistical Analysis and High Dimensional Data Mining (HDM-2008), Kayseri, Turkey, June 19-23, 2008.

**Invited speaker on:** J. Andrew Howe, and **H. Bozdogan**, *Regularized SVM Classification with Information Complexity and the Genetic Algorithm*. Invited talk at the International Conference on Multivariate Statistical Analysis and High Dimensional Data Mining (HDM-2008), Kayseri, Turkey, June 19-23, 2008.

**Invited speaker:** Liu, Y., and **H. Bozdogan**, *Robust And Misspecification Resistant Model Selection in Multiple Regression Models with Information Complexity and the Genetic Algorithms*. Invited talk at the International Conference on Multivariate Statistical Analysis and High Dimensional Data Mining (HDM-2008), Kayseri, Turkey, June 19-23, 2008.

**Invited speaker:** Esra Turan, and **H. Bozdogan**, *Bayesian Factor Analysis Using Information Complexity with Gibbs Sampling and Iterated Conditional Modes (ICM) Algorithms*. Invited talk at the International Conference on Multivariate Statistical Analysis and High Dimensional Data Mining (HDM-2008), Kayseri, Turkey, June 19-23, 2008.

**Invited speaker:** Eylem Deniz Akinci, G. Kiroglu, G., and **H. Bozdogan**, *AIC and Information Complexity Type Model Selection Criteria in Measurement Models*. Invited talk at the International Conference on Multivariate Statistical Analysis and High Dimensional Data Mining (HDM-2008), Kayseri, Turkey, June 19-23, 2008.

**Invited speaker:** Sukumar, S.R., **Bozdogan, H**, Page, D.L., Koschan A.F., and Mongi, A.A. *Uncertainty Minimization in Multi-sensor Localization Systems Using Model Selection Theory*. Presented at the 19th International Conference on Pattern Recognition (ICPR) 2008 in T1P6OR9 Sensor Systems.

**Invited speaker:** Sukumar, S.R., **Bozdogan, H**, Page, D.L., Koschan A.F., and Mongi, A.A. *Learning Structurally Discriminant Features in 3D Faces*. Presented at the ICIP 2008.

**Invited speaker:** S. Sukumar, **H. Bozdogan**, D. Page, A. Koschan, and M. Abidi, "On Handling Uncertainty in the Fundamental Matrix for Scene and Motion Adaptive Pose

Recovery," in *Proc. IEEE Conference on Computer Vision and Pattern Recognition CVPR 2008*, Anchorage, Alaska, June 2008, ([pdf-file, 1.138 MB](#)).

**2009 Invited speaker on Misspecification resistant model selection using information complexity with applications** at the International Conference of the Classification and Data Analysis Group (CLADAG) of the Italian Statistical Society at the University of Catania, in Catania, Italy, Sept. 9-11, 2009.

**Invited speaker on A New Modern Approach to Statistical Data Mining Using Information Complexity and the Genetic Algorithm** at Bocconi University in Milan, Italy, Sept. 14-15, 2009.

Gave a Contributed Session Presentation on *Detection Of Outliers in Bayesian Factor Analysis Using Information Complexity* at the **Joint Statistical Meetings**, Washington, D.C., August 3-6, 2009.

Hosted and chaired two sessions at the Conference of the Classification Society of North America in St. Louis during June 10-14, 2009 for six Ph.D. students who presented their doctoral research work.

**Invited speaker on: Computer-aided Detection of Breast Cancer Using Probabilistic Kernel Discriminant Analysis and Information Complexity at the International Biostatistics Conference in Istanbul, Turkey during May 10-14, 2009.**

**2010 Invited Session Chair Speaker on Robust Bayesian Relevance Vector Machines using Information Complexity and the Genetic Algorithm** at the **41<sup>st</sup> Symposium on the IINTERFACE 2010: Computational Statistics and Human Behavior, Invited Session: Model Selection Problems in Kernel-Based Methods with Applications**, June 16-19, 2010, Seattle, Washington.

**Invited to give two lectures on** The General Theory of Information Complexity (ICOMP) Class Criterion for Model Selection at Mimar Sinan University Department of Statistics, Istanbul Turkey October 15, 2010, and *Early Detection of Heart Attack with Mixture-Model Cluster Analysis Using Information Complexity* at Yedi Tepe University, Istanbul Turkey, October 18, 2010.

**Keynote lecture on Information Complexity and Model Selection in High Dimensional Data Mining Using the Genetic Algorithm** at SAS M2010 DATA MINING CONFERENCE October 24-29, 2010 Las Vegas, Nevada.

**Keynote lecture on Computer-Aided Detection of Breast Cancer: Stalking the Serial Killer. 5<sup>th</sup> INFORMS-2010 Workshop on Data Mining and Health Informatics** during November 5-7, 2010 in Austin, Texas.

**2011 Invited Plenary Speaker** presented with Yan Liu on *Robust and Misspecification Resistant Model Selection in Regression Models with Information Complexity and the Genetic Algorithm* at the **7<sup>th</sup> International Conference of the Turkish Statistical Association**, during April 28-May 1, 2011, Antalya, Turkey.

**Contributed Paper** presented with Bahar Erar on *Mixture Model Cluster Analysis under Different Covariance Structures Using Information Complexity* at the **7<sup>th</sup> International Conference of the Turkish Statistical Association**, during April 28-May 1, 2011, Antalya, Turkey.

**Invited Panelist** at the **Open Forum on the Future of Cross-Disciplinary Fields in Business** at the School of Business of Istanbul University, during May 18, 2011, Istanbul, Turkey.



**Invited Speaker** on *Robust and Misspecification Resistant Multivariate Regression and Subset Selection with ICOMP and the Genetic Algorithm* at the Department of Statistics at Ankara University, during June 1, 2011, Ankara, Turkey.

**Invited Speaker** on *Computer-Aided Detection of Breast Cancer: Stalking the Serial Killer Using Probabilistic Kernel Discriminant Analysis* at the Department of Statistics of Middle East Technical University, during June 2, 2011, Ankara, Turkey.

**Invited Session Chair Speaker** on *Bayesian Kernel Mixture-Model Cluster Analysis of Mixed Data with Missing Observations Using Information Complexity* (with H. Bensmail) at the **Yeditepe International Research Conference on Bayesian Learning in the Invited Session on Bayesian Model Selection in High Dimensions**, during June 15-17, 2011, Istanbul, Turkey.

**Invited Speaker** on *Robust and Misspecification Resistant Multivariate Regression and Subset Selection with ICOMP and the Genetic Algorithm* at the School of Business, Istanbul University, during June 18, 2011, Istanbul, Turkey.

**Keynote lecture** on the *General Theory and Applications of a New Information Complexity Criterion for Model Selection* at the **International Conference on Applied Analysis and Algebra**, Yildiz Technical University, during June 29-30, 2011, Istanbul, Turkey.

### **Contributed Papers Presented in Professional Societies:**

**1981** *Use of Akaike's Information Criterion (AIC) in Cluster Validity and Identification Problems*, The Classification Society, 12th Annual Meeting, Toronto, May 31-June 2, 1981.

**1982** *Multi-Sample Cluster Analysis Using Akaike's Information Criterion*, Joint Meeting of the Classification Society and the Psychometric Society, University of Quebec, Montreal, May 30-June 2, 1982.

*Multi-Sample Cluster Analysis with Varying Parameters Using Akaike's Information Criterion*, Joint Statistical Meetings of the American Statistical Association (142nd annual meeting), the Biometric Society, ENAR and WNAR, and the Institute of Statistical Mathematics, Cincinnati, Ohio, August 16-19, 1982.

**1984** *AIC-Replacements for Multivariate Multi-Sample Conventional Tests of Homogeneity Models*, Numerical Taxonomy Conference: Symposium on Problems in Multivariate Analysis, University of Notre Dame, Indiana, October 22-23, 1982; and Classification Society's Meeting, University of California at Santa Barbara, California, June 24-27, 1984.

*An Adjusted Likelihood-Ratio Approach to the Behrens-Fisher Problem*, Joint Statistical Meetings of the American Statistical Association, Philadelphia, Pennsylvania, August 13-16, 1984.

**1985** *The Use of AIC and Stein-Rule Shrinkage Estimators in Two-Way Classification Models*, The Biometric Society's ENAR Joint Meeting with the ASA at Raleigh, NC, March 24-27, 1985.

**1986** *Model Selection Approach to the Factor Model Problem, Parameter Parsimony, and Choosing the Number of Factors*, Joint Statistical Meetings of ASA, ENAR, WNAR, and IMS at Las Vegas, Nevada, August 5-8, 1985, and Classification Society of North America, Annual Meeting at Ohio State University, Columbus, Ohio, June 14-16, 1986.

*Selecting the Number of Knots in Fitting Cardinal B-Splines for Regression and Density Estimation Using AIC*, Joint Statistical Meetings of ASA, ENAR, WNAR, and IMS at Chicago, Illinois, August 16-22, 1986.

*Early Detection and Quantification of Human Atheroma in the Aortic Wall by Multidimensional Approach to 1H-NMR Imaging*, (with J. Pearlman, M.D., et al.). American Heart Association's 59th Annual Scientific Meeting, November 17-20, 1986.

- 1987** *Coping with Improper Solutions in Factor Analysis: An Information-Theoretic Approach*, Statistics Section VAS Chapter, American Statistical Association, Old Dominion University, Norfolk, Virginia, May 21-22, 1987; and at the Annual Meeting of the Classification Society of North America, McGill University, Montreal, Canada, June 15-17, 1987.

*Finite Mixture Models for Cluster Analysis of Grouped Data*, Annual Meeting of the Classification Society of North America, McGill University, Montreal, Canada, June 15-17, 1987.

*Selecting Loglinear Models and Subset Selection of Variables in Multiway Contingency Tables Using Akaike's Information Criterion (AIC)*;

*ICOMP: A New Model-Selection Criterion*;

*Information-Theoretic Univariate Density Estimation Under Different Basis Functions* (with T. Atilgan);

*Two-Stage Multi-Sample Cluster Analysis (TSMSCA) as a General Approach to Discriminant Analysis (DA)* (with D. Eisenblatter): First Conference of the International Federation of Classification Societies, Technical University of Aachen, Aachen, W. Germany, June 29-July 1, 1987.

- 1994** *A New Informational Complexity Criterion and Its Applications to Bayesian Modeling*. Paper presented at the Special Contributed Session on Information Theory and Bayesian Analysis, 1994 Joint Statistical Meetings, Toronto, Canada, August 13-18, 1994.

Discussant of *Bayesian Model Selection and Analysis of Random Effect Models*, Section on Bayesian Statistical Science, 1994 Joint Statistical Meetings, Toronto, Canada, August 13-18, 1994.

- 1996** *Informational Complexity Approach to Predictive Regression Models of Future Observations*. Paper presented at the Joint Research Conference on Statistics in Quality, Industry and Technology, Gaithersburg, Maryland, during May 29-31, 1996.

- 2010** Contributed Paper to be presented with Bahar Erar on *Mixture-Model Cluster Analysis for Medical Diagnosis under Different Covariance Structures Using Information Complexity*. International Biostatistics Conference at Florianopolis, Brazil, during December 5-10, 2010.

### **Book Reviews:**

Handbook of Statistics 2: Classification, Pattern Recognition and Reduction of Dimensionality, P. R. Krishnaiah and L. N. Kanal (eds.). North-Holland Publishing Company, 1982. Reviewed for the Journal of the American Statistical Association.

Model Selection and Inference by K. P. Burnham and David R. Anderson, Springer 1998. Review for SIAM.

### **Contribution to Parts of Books (Chapters):**

Prepared the Solutions Manual for Chapters 11-16 of An Introduction to the Statistical Analysis of Data, by T. W. Anderson and S. L. Sclove (Boston: Houghton Mifflin Company, 1978).

### **Academic and Professional Services:**

### **College and University Committees:**



**Present College Committees:**

- CBA Faculty Research Council, 1998-.
- College of Engineering Promotions & Tenure Committee, 2004-2007.

**University Committees Served:**

- UTK Research Council. Appointed by the Chair of the Research Council.
- Chair of UT Centers Review Committee.
- UTK Faculty Senator from CBA.
- UTK Research Council.

**Past College & University Committees:**

- Faculty Senator for Academic Services, University of Illinois, Chicago, 1981-1983.
- President, Virginia Chapter of the American Statistical Association (ASA), Virginia Academy of Sciences, 1985-1986.
- Faculty Associate member of the Methodological Core in Preference Measurement of the Center for Risk Management of Engineering Systems, School of Engineering and Applied Science, University of Virginia.
- Faculty Senator from CBA, The University of Tennessee, 1992-1994.
- Senate Research Council and Research Computing Committee 1992-97.
- Chair of Research Infrastructure Committee, The University of Tennessee, 1996-97.
- Faculty Senate Executive Committee, The University of Tennessee, 1994-1996.
- CBA Organizational Research, The University of Tennessee.
- CBA Graduate Fellowship Awards Committee, 1994-1996.
- CBA Management Science Programs Committee, 1995-1996.
- CBA Building Committee, 1995-1996.
- CBA Promotion & Tenure Committee, 1997-2000.
- CBA Faculty Research Council, 1992-1998.
- Research & Creative Activity Self-Study Committee, The University of Tennessee, 1997-1998.
- Co-Chair of Research Infrastructure Committee, UTK Research Council, 1998-2001. Appointed by the Chair of the Research Council.
- APEC Focus Area: Computational and Informational Science Advisory Committee of the Vice Chancellor for Academic Affairs, The University of Tennessee, 1998-99.
- High Performance Computing Committee of the Vice Chancellor for Division of Information Infrastructure (DII), the University of Tennessee, 1998.

**Departmental Committees:**

**Present Departmental Committees:**

- Director of Statistics Micro-Computing Laboratory (SMCL).
- Ph.D. Program Committee.
- Ph.D. Program Liaison.

**Past Departmental Committees:**

- Undergraduate Curriculum Committee, Department of Quantitative Methods, University of Illinois, Chicago, 1981-1983.
- Chairman, Statistics Forum Colloquium of the University of Virginia, 1984-1988.
- Graduate and Hiring Committee in Statistics, Department of Mathematics, University of Virginia.
- Graduate Program and Faculty Development Committees Department of Statistics, The University of Tennessee, 1990-Present.

- Chair of Statistics Colloquium Series, 1991-92, 1995-96, 1996-97, 1998-99.
- Chair of Faculty Development Committee, 1996-97.
- Chair of Tenure & Promotion Adhoc Committee, 1998-99.
- Director of Statistics MicroComputer Laboratory, 1998-.
- Technology Committee. 2000-2006.

### **Collaboration with Statistical/Mathematical Journals:**

**Reviewer**                      Zentralblatt fur Mathematik/Mathematical Abstracts.

**Referee**                      Journal of the American Statistical Association (JASA); Statistics and Probability Letters; Computational Statistics and Data Analysis; Psychometrika, Annals of the Institute of Statistical Mathematics (AISM); Journal of the Japan Statistical Society (JJSS); Multivariate Behavioral Research (MBR); Psychological Bulletin; Journal of Applied Stochastic Models and Data Analysis, Journal of the Royal Statistical Society (JRSS), British Journal of Mathematical Psychology and Statistics.

Special Section of *Psychometrika*, Vol. 52, No. 3, September 1987 on *Statistical Modeling and Model Evaluation*.

Three-volume set of the Proceedings of the First US/Japan Conference of the Frontiers of Statistical Modeling: An Informational Approach.

A new on-line journal the *Journal of Pattern Recognition Research (JPRR)* a forum for the electronic publication of high-quality research and articles with industrial experience in all areas of pattern recognition and classification.

### **Editor & Editorial Boards:**

- Special Section of *Psychometrika*, Vol. 52, No. 3, September 1987 on *Statistical Modeling and Model Evaluation*.
- Three-volume set of the **Proceedings of the First US/Japan Conference of the Frontiers of Statistical Modeling: An Informational Approach**, Volume 1, 2, and 3, **1994**.
- **Special Issue Editor** of the SPECIAL ISSUE ON GRANGER ECONOMETRICS AND STATISTICAL MODELING DEDICATED TO THE MEMORY OF PROF. SIR CLIVE W.J. GRANGER of the **EUROPEAN JOURNAL OF PURE AND APPLIED MATHEMATICS**, Vol. 3, No. 3, **2010**.  
<http://www.ejpam.com/index.php/ejpam/issue/view/11/showToc>

**(NOTE: This volume has been downloaded over 2000 times since it has been published in May 2010.)**

- **Editor** of *Journal of Pattern Recognition Research (JPRR)* a web based electronic e-journal: <http://www.jprr.org/index.php/jprr/about>
- **Editorial Board Member** of the *European Journal of Pure & Applied Mathematics (EJPAM)*: <http://www.ejpam.com/index.php/ejpam/index>
- **Editorial Board Member** of the *Journal of Business Administration of the University of Istanbul, Turkey*: <http://www.ifdergisi.org/index.php/ifdergi>

- **Editorial Board Member** of Hacettepe University *Journal of Mathematics & Statistics*. <http://www.mat.hacettepe.edu.tr/hjms/english/>
- **Editorial Board Member** of *BEHAVIORMETRIKA*, Japan: [http://wwwsoc.nii.ac.jp/bsj/journal/behaviormetrika\\_e.html](http://wwwsoc.nii.ac.jp/bsj/journal/behaviormetrika_e.html)
- **Editor** of *High Dimensional Data Mining* book, 2010. Forthcoming.

### **Consulting & Entrepreneurial Activities:**

- Northwest Educational, Inc., Arlington Heights, Illinois (Summer 1983).
- CBER Clustering Project, 2004.
- Jewelry TV by CAN, Chief Scientist for Customer Data Mining, September 2004-2005.
- Advisor to Significant-P Analytics, 2010-Present.
- Developing relationship with one of the largest Telecommunications Companies in Turkey to carry out some data mining work for analyzing cell phone customer retention as a demonstration of the application of the my research result. This potential funding opportunity might fund several graduate students and faculty time.

### **Teaching Experience:**

#### **Statistics:**

Taught many of courses both the *Undergraduate & Graduate level* in Statistics for:

- Business and Economics (precalculus)
- Introduction to Statistics
- Introductory Probability and Statistics
- Statistical Methods in Research; MINITAB, SPSS, BMDP, IDA (Interactive Data Analysis System)
- Introduction to Mathematical Statistics I, and II
- Engineering Statistics
- Introduction to Regression Modeling
- Applied Regression Analysis
- Regression Modeling
- Advanced Topics in Statistics
- Probability and Statistical Inference
- Statistical Inference I & II
- Multivariate and Data Mining Techniques
- Bayesian Statistical Modeling
- Computational Methods in Statistics
- Statistical Modeling
- Multivariate Statistical Modeling
- Advanced Data Mining

#### **Mathematics:**

- Calculus and Analytic Geometry
- Calculus for Business
- College Algebra
- Plane Trigonometry
- Finite Mathematics for Business
- Linear Algebra
- Matrix Differential Calculus with Applications

**REFERENCES:** Can be provided upon request.

<p><b>Professor Stanley L. Sclove</b> Dept. of Information and Decision Sciences 2404 University Hall 601 South Morgan Street The University of Illinois at Chicago Box 4348, Chicago, IL 60680</p> <p>E-mail: <a href="mailto:slsclove@uic.edu">slsclove@uic.edu</a></p> <p>Phone: (312) 996-2681(Office) (312) 996-2676 (Dept.) Fax: (312) 413-0385</p>	<p><b>Professor Dr. Hans-Herman Bock, Emeritus</b> Institut für Statistik und Wirtschaftsmathematik Technical University of Aachen Wüllnerstrabe 3, D-52056 Aachen Germany</p> <p>E-mail: <a href="mailto:bock@stochastik.rwth-aachen.de">bock@stochastik.rwth-aachen.de</a></p> <p>Phone: 011-(241) 80-4573 (Office) Fax: 011-(241) 8888-130</p>
<p><b>Professor C. Warren Neel</b> <b>Former Dean and</b> <b>Executive Director of Corporate Governance</b> Center College of Business Administration The University of Tennessee 511 Stokely Management Center Knoxville, Tennessee 37996 USA Phone: (865) 974-8455 E-mail: <a href="mailto:cneel@utk.edu">cneel@utk.edu</a></p>	<p><b>Professor Arjun K. Gupta</b> Distinguished University Professor Department of Mathematics and Statistics Bowling Green State University Bowling Green, OH 43403</p> <p>E-mail: <a href="mailto:gupta@bgsu.edu">gupta@bgsu.edu</a></p> <p>Phone: (419) 372-2820 (Office) (419) 372-2636 (Dept.) Fax: (419) 372-6092</p>
<p><b>Professor Sadanori Konishi</b> Graduate School of Mathematics Kyushu University 6-10-1 Hakozaki, Higashi-ku Fukuoka, 812 JAPAN</p> <p>E-mail: <a href="mailto:konishi@math.kyushu-u.ac.jp">konishi@math.kyushu-u.ac.jp</a></p>	