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CURRICULUM VITAE

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Date of Birth:

August 14, 1946

Academic Degrees:

B.A., Mathematics, University of California, Berkeley, 1968
M.A., Statistics, University of California, Berkeley, 1970
Ph.D., Statistics, University of California, Berkeley, 1972

Dissertation Advisor:

David Freedman

Positions:

Post-Doctoral Researcher, University of California, Riverside, 1972-73.
Research Statistician and Lecturer, University of California, Riverside, 1973-1975.
Assistant Professor, Indiana University, Bloomington, 1975-1981.
Associate Professor, Indiana University, 1982-1992
Professor, Indiana University, 1992-to date.

Sabbatical Visit:

University of Pensylvania, Spring 1988

University of California, Fall 1993

University of California, Fall 2001

Recent Visiting Appointments as Guest Research Professor:

Université de Bruxelles, Belgium, February-May 1993
Université de Lille, France, May-June 1993
National ChengChi University, Taipei, September-October 1993
Université de Toulouse, France, November-December 1993
Université de Pau, France, March-April 1995
Université de Lille, France, May-June 1995
National ChengChi University, Taipei, May-June 1996
Université de Bruxelles, Belgium, May-June 1997
Université de Bruxelles, Belgium, November-December 1998
Université de Lille, France, May-June 1999
National ChengChi University, Taipei, May-June 2005

Professional Associations:

American Mathematical Society
Institute of Mathematical Statistics

Academic Honors:

Listed in 1994 as one of the top (31st) 100 most prolific authors in statistical journals.

Elected Fellow of the Institute of Mathematical Statistics in 1995.

Lifetime Achievement Award given by the Chinese Econometrics Society in 2006.

Recent Invited Talks:

Mar. 2000	Yale University, Connecticutt
Aug. 2000	National Chengchi University, Taipei
May 2001	University of Delaware, Newark
April 2003	AMS Conference special session, Indiana
Mar. 2003	AMS Conference, Bloomington, Indiana
April 2004	University of Delaware
June 2005	International Conference on Technologies, Taiwan
June 2006	Conference on Econometrics, China

Professional services:

Associate Editor, Journal of Nonparametric Statistics, 1997-to date.

Recent Ph.D Students:

Wentao Gu
Thesis Title: Fixed Design Regression for Associated Random Variables (2004)

Soyeon Lee
Thesis Title: Nonparametric Spatial Estimation (2006)

Jiexiang Li
Thesis Title: Fixed design nonparametric regression for linear process (2006)

PUBLICATIONS:

[1] Unbounded local times (with P. W. Millar). *Zeitschrift für Wahrscheinlichkeitstheorie Verwandte Gebiete* 30, 87-92, (1974).

[2] Local maxima of the sample functions of the two-parameter Wiener Process. *Proceedings of the American Mathematical Society* 58, 250-253, (1976).

[3] On a problem posed by Orey and Pruitt on the range of the N-parameter Wiener process in R^d. *Zeitschrift für Wahrscheinlichkeitstheorie Verwandte Gebiete* 37, 27-33, (1976).

[4] Hausdorff dimension of the sample functions of the N-parameter Wiener process. *Annals of Probability* 5, 235-242, (1977).

[5] The range of Levy's N-parameter Brownian motion in d-space. *Annals of Probability* 7, 532-536, (1979).

[6] Local sample path properties of Gaussian fields (with L. D. Pitt). *Annals of Probability* 7, 477-493, (1979).

[7] Local maxima for the sample functions of the N-parameter Bessel process (with M. L. Puri). *Stochastic Process and their Applications* 9, 137-145, (1979).

[8] Empirical distribution functions and functions of order statistics under mixing (with M. L. Puri). *Journal of Multivariate Analysis* 10, 405-425, (1980).

[9] Invariance principles for rank statistics for testing independence (with M. L. Puri). *Contributions to Probability Theory*, *Eugene Lukacs Vol.*, *Academic Press*, 267-282, (1980).

[10] Quelques résultats sur les modèles bilinéaires de séries chronologiques (with T. D. Pham). *Comptes Rendus de L'Académie des Sciences, Paris, Série A*, 335-338, (1980).

[11] The strong mixing properties of the autoregressive moving average time series models (with T. D. Pham). *Séminaire de Statistique, Grenoble*, 59-70, (1980)

[12] On the first order bilinear time series model (with T. D. Pham). *Journal of Applied Probability* 18, 617-627, (1982).

[13] On functions of order statistics in the non *i.i.d.* case (with T. D. Pham). *Shankhya, series A*, 251-261, (1982).

[14] Estimating parameters from mixed samples (with M. Shaked). *Journal of the American Statistical Association* 77, 196-203, (1982).

[15] The Hausdorff α-dimensional measures of the level sets and the graph of the N-parameter Wiener process (with M. L. Puri). *Metrika* 31, 275-283, (1984).

[16] Some mixing properties of time series models (with T. D. Pham). *Stochastic Processes and their Applications* 19, 297-303, (1985).

[17] Rank order statistics for time series model. *Annals of the Institute of Statistical Mathematics* 40, 247-260, (1988).

[18] Recursive density estimation under dependence. *IEEE Transactions in Information Theory, volume* IT-35, 1103-1108, (1989).

[19] Nearest neighbor density estimators under serial dependence (with Hung T. Nguyen). *Publication de l'Institut de Statistique de l'Université de Paris* XXXXIV, *fascicule* 1, 69-93, (1989).

[20] The L_1 convergence of density estimates under dependence. *Canadian Journal of Statistics* 17, 197-208, (1989).

[21] On the first order autoregressive process with infinite variance (with N. H. Chan). *Econometric Theory* 5, 354-362, (1989).

[22] Predicting the sample mean by extreme order statistics (with T. D. Pham). *Metrika* 36, 117-125, (1989).

[23] Rank statistics for serial dependence. *Journal of Statistical Planning and Inference* 24, 215-232, (1990).

[24] Kernel estimation of the survival function and hazard rate under weak dependence (with A. J. Izenman). *Journal of Statistical Planning and Inference* 24, 233-247, (1990).

[25] Kernel density estimation on random fields. *Journal of Multivariate Analysis* 34, 37-53, (1990).

[26] Recursive density estimation under a weak dependence condition. *Annals of the Institute of Statistical Mathematics* 42, 305-329, (1990).

[27] Kernel density estimation under dependence. *Statistics and Probability Letters* 10, 193-201, (1990).

[28] Kernel density estimation under a locally mixing condition (with T. D. Pham). *Proceedings of the NATO ASI Series* (1991) 419-430.

[29] Multivariate variable kernel density estimates for time series. *Canadian Journal of Statistics* 19, 371-387, (1991).

[30] On the best unbiased estimate for the mean of a short autoregressive time series (with T. D. Pham). *Econometric Theory* 8, 120-126, (1992).

[31] Nonparametric tests for serial dependence (with N. H. Chan). *Journal of Time Series Analysis* 1, 19-28, (1992).

[32] Fixed regression design for time series: asymptotic normality (with G. G. Roussas and D. A. Ioannides). *Journal of Multivariate Analysis* 40, 173-204 (1992).

[33] Kernel density estimation for linear processes. *Stochastic Process and their Applications* 41, 281-296, (1992).

[34] Asymptotic normality of the recursive kernel regression estimates under dependence conditions, and time series (with G. G. Roussas). *Annals of Statistics* 20, 98-120, (1992).

[35] Joint asymptotic normality of kernel estimates under dependence conditions, with application to hazard rate (with G. G. Roussas). *Nonparametric Statistics* 1, 335-355, (1992).

[36] Density estimation on random fields (with S. Yakowitz). *Journal of Multivariate Analysis* 44, 23-46, (1993).

[37] Nonparametric functional estimation for time series by local average estimators. *Annals of Statistics* 40, 1040-1057, (1993).

[38] The L_1 complete convergence of recursive kernel estimators under dependence. In Statistical Sciences and Data Analysis. *Proceedings of the Third Pacific Area Statistical Conference* (Kameo Matusita, Madan L. Puri and Takesi Hayakawa Eds.) Ultrecht, The Netherlands, 427-439, (1993).

[39] Order statistics for nonstationary time series (with Berlin Wu). *Annals of the Institute of Statistical Mathematics* 45, 665-686.

[40] Density estimation for time series by histograms. *Journal of Statistical Planning and Inference* 40, 61-79, (1994).

[41] Fixed design regression for linear time series. (with G. G. Rouss as, S. Yakowitz and B. Truong Van). *Annals of Statistics* 24, 975-991. (1996).

[42] On histograms for linear processes (with Michel Carbon). *Journal of Statistical Planning and Inference* 53, 403-419, (1996).

[43] Density estimation for linear time series: Asymptotic properties and optimal bandwidth Selection. (with Marc Hallin). *Annals of the Institute of Statistical Mathematics* 48, 429-449, (1996)

[44] Kernel density estimation for random fields: The L_1 Theory. (with M. Carbon and M. Hallin). *Nonparametric Statistics* Nonparametric Statistics 6, 157-170, (1996)

[45] Frequency polygons for weakly dependent processes (with M. Carbon and B. Garel). *Statistics and Probability Letters* 33, 1-13, (1997)

[46] Kernel density estimation for random fields (with M. Carbon and Berlin Wu) *Statistics and Probability Letters* 36, 115-125, (1997)

[47] Density estimation on nonisotropic random fields (with R. Bradley) *Journal of Statistical Planning and Inference* 81, 51-70, (1999).

[48] Density estimation for spatial linear processes (with M. Hallin and Z. Lu). *Bernoulli* 7, 657-668, (2001)

[49] Density and regression estimation for weakly dependent random variables (with Christian Francq). *Nonparametric Statistics* 14, 729-747, (2002).

[50] Kernel Density Estimation for Spatial Processes: the L1 Theory. (with M. Hallin and Z. Lu) *Journal of Multivariate Analysis* 88, 61-75, (2003).

[51] Symmetric regression quantile and its application to robust estimation for the nonlinear regression model (with Lin-An Chen and Li-Ching Lin). *Journal of Statistical Planning and Inference* 126, 423-440, (2004).

[52] Spatial Local Linear Regression. (with M. Hallin and Z. Lu). *Annals of Statistics* 33, 1-25, (2004).

[53] Spatial nonparametric regression estimation.(with Soyeon Lee). 2005 International Conference on Intelligent Technologies and Applied Statistics (Berlin Wu, Ed.). Taipei, Taiwan, 39-46, (2005).

[54] Kernel regression estimation for random fields. *Journal of Statistical Planning and Inference* Journal of Statistical Planning and Inference, 137, 778-798 (with Michel Carbon and Christian Francq), (2007).

Technical Reports:

[1] Correlation between rain and forest fires. Technical Report No. 13, University of California, Riverside, (1973).

[2] Fixed design regression for time series (with G. G. Roussas and D. A. Ioannides). Technical Report No. 186, University of California, Davis, (1989).

[3] Joint asymptotic normality of kernel estimates under dependence conditions, with applications to hazard rate. Technical Report No. 189, University of California, Davis, (1990).

[4] Asymptotic normality of the recursive kernel regression estimate under dependence conditions (with G. G. Roussas). Technical Report No. 206, University of California, Davis, (1991).

[5] Nonparametric fixed-design regression with linear non-mixing disturbances. Technical Report No. 247, University of California, Davis, (1992).

DESCRIPTION OF RESEARCH

My main interest concerns the development of statistical techniques for inference in data which exhibit serial dependence or spatial interaction. My recent work deals with the problem of functional estimation, regression and prediction involving spatial data. My research is described briefly below.

1. Density estimation for time series. Density estimation of a probability density is an interesting problem in communication theory, system identification and pattern recognition. There are many reasons why this problem is important. It is often useful to check whether the density of a time series is Gaussian or close to it when parameter estimation is carried out under the Gaussian assumption. Estimating the density of a time series is also of interest since it is reasonable to use the marginal density of a stationary time series for long-term forecasting. I have found weak conditions for the almost sure uniform convergence of both recursive and nonrecursive estimates of the density. Also found are conditions for the asymptotic normality of the relevant estimates.

2. Regression and prediction in time series. I have proposed a dependence condition called the strong mixing condition in the locally transitive sense (SMLT). In data analysis, the SMLT condition is much easier to employ than the strong mixing condition. Under general conditions, I showed that regression estimates and various functional estimates can attain the optimal rates of convergence for both bounded and unbounded time series. The results resolve some open questions raised by other researchers in this field. Both the fixed-design case and the random-predictor case have been considered. The practical motivation is to provide nonparametric methods to the analysis of hydrologic data. Rainfall/runoff data is quite consistent with the SMLT condition. In the analysis of hydrologic data, it has been shown that nonparametric methods can yield optimal decision functions under relatively general conditions.

3. Estimation of the survival function and hazard rate. The question of estimating the survival function and the hazard rate is of significant theoretical and practical importance in reliability theory. Here, I considered the problem under the assumption that the sample is collected from a stochastic process satisfying some weakly dependent conditions. This assumption is often much more realistic than the asssumption of independence of observations. In the classical theory of competing risks it is assumed that the risks are independent and that death does not result from simultaneous cause. These assumptions often do not hold. Situations when the data are dependent occur often in engineering problems, for example, when the observations are the lifetimes of resistors connected in series. I have found explicit conditions for various estimates of both the hazard rate and survival function to attain optimal rates of convergences. Some new estimates have also been proposed.

4. Spatial statistics. Recently, some of the results above have been generalized to random fields. My future research goal is to develop techniques for the analysis of data which are both space and time varying. The general setting is a nonhomogeneous random field which incorporates both space and time variables. The research has potential application in the analysis of data collected irregularly at different space and time points, for example,

in data obtained by aerial photography. I am also interested in developing new methods of spatial prediction as alternatives to ordinary kriging. Practical consideration involves environmental data and data from geology, soil science and meteorology.