

# Curriculum Vitae

## General

Name: Song Xi CHEN

Current Employment: Professor  
Department of Statistics  
Iowa State University

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## Academic History

Ph.D. in Statistics, 1993, Australian National University.

M.Sc. in Statistics and Operations Research, 1990, Victoria University of Wellington.

M.Sc. in Mathematical Statistics, 1988, Beijing Normal University.

B.Sc. in Mathematics, 1983, Beijing Normal University.

## Employment History

May 2006—Present: Professor of Statistics, Iowa State University

Nov 2003 – May 2006: Associate Professor, Iowa State University

July 2000- Nov. 2003 : Associate Professor, National University of Singapore

Jan. 1995 – June 2000: Senior Lecturer/Lecturer, La Trobe University.

Nov. 1992 - Jan. 1995: Statistician, CSIRO Marine Science and Biometrics Unit.

July 1983 – Aug. 1985: Lecturer, Beijing Institute of Economics.

### **Current Research Support:**

1. Statistical Inference for Continuous-Time Stochastic Processes, PI,

**National Science Foundation:** DMS-0604563, **\$165,018**, 08. 2006 -- 08. 2009 ,

Co-PI: Liang Peng of GA Tech.

2. A Nonparametric Approach to Population Size Estimation for Multiple Systems Capture-Recapture surveys, PI,

**National Science Foundation:** SES-0518904, 09.2005 - 08. 2008, **\$280,416**,

Co-PIs: S. Nusser and J. Opsomer.

3. A Supplement to NSF SES [0650938](#) A Nonparametric Approach to Population Size Estimation for Multiple System Capture-Recapture Surveys

**US Census Bureau** via NSF \$19,080.00

### **Pending Research Support**

NSF DMS: Development of High-Dimensional Data Analysis Methods for the Identification of Differentially Expressed Gene Sets. **Principal Investigator:** Dan Nettleton; **Co-PIs:** Song Chen, Jack Dekkers Peng Liu, Christopher Tuggle.

### **Past Research Support:**

1. Empirical Likelihood and Computation, Co-PI,

**Australian Research Council** Large Grant, 1994-1996; \$10,000, jointly with B. M. Brown (PI).

2. Non-parametric Curve Estimation, PI,

**Australian Research Council** International Exchange grant, 1998-1999, \$13,000.

3. Applications of Empirical Likelihood in Semi- and Non-parametric Statistical Inference, PI

**National University of Singapore Academic Research Grant**, Nov 2002-Nov 2003, \$46,306.

4. Computer-Intensive Statistical Methods for Testing Specifications of Financial Market Models, PI

**National University of Singapore Academic Research Grant**, 17-Dec. 2001 - 31-Dec. 2004, \$88,300.

## **Scholarship and Award**

1989, Telecom New Zealand Scholarship;  
1990-1992: Australian National University Ph.D Award.

## **Research Interests**

Inference for various risk measures and stochastic processes including testing of diffusion models and time series models.

Inference for High Dimensional Data;

Analysis on Missing data; Multiple System Survey for US Census

Empirical likelihood: Second order properties and various applications.

## **Graduate Students**

### Ph.D students at ISU:

Dong Wang, Co-supervisor, Nonparametric Imputation of Missing values and empirical likelihood. Completed in 2006, an Assistant Professor at University of Nebraska.

Chengyong Tang, Parameter estimation for diffusion processes and Nonparametric Approach for Census Undercount Estimation.

Yingli Qin, Statistical Inference for high dimensional data.

Shan Yang, Statistical Inference for Stochastic Processes and Applications.

### Graduate Students supervised at NUS:

Kong Efang Ph. D. joint with Xia, Yingcun "On Semiparametric Model and Subset Selection". Completed 2006.

Jianfei Cao, MSc "Nonparametric Estimator of Copula Functions", completed 2003.

Longhui Yang, MSc, "Goodness-of-fit Tests for Financial Market Models", completed 2003

ChengYong Tang, Msc, "Nonparametric Estimation of Value at Risk", completed 2003

Ming Li, MSc "Specification Tests for Financial Market Models" , completed in 2002.

Chiu Min Wong, MSc, "Empirical likelihood for dependent processes with applications to Value at Risk", completed in 2002.

Supervised honours projects: Lin Ping Ping "Line transect survey for cluster populations", 2001  
Joli: Kernel Density Estimation, 2001

### **Teaching Activities**

ST690A Computer-Intensive Statistical Methods, Spring 2007

ST647 Multivariate Analysis, Fall 2006

ST643 Advanced Theory of Statistical Inference (Ph.D Core), Spring 2006

ST546 Nonparametric Statistical Models, Fall 2005.

ST643 Advanced Theory of Statistical Inference (Ph.D Core), Spring 2005

ST647 Multivariate Analysis, Fall 2004

ST543 Theory of Probability and Statistics II (MS Core), Spring 2004

*Teaching at National University of Singapore:*

ST4232: Nonparametric Statistics, Fall 2003;

ST5207: Nonparametric Regression, Spring 2003

ST4232: Nonparametric Statistics, Fall 2002

ST5207: Nonparametric Regression, Spring 2002

ST4232: Nonparametric Statistics, Fall 2001

ST5207: Nonparametric Regression, Spring 2001

MA 4243/ ST4207: Nonparametric and Robust Statistics, Fall 2000

### **Publications**

[1] Chen, S.X., Smith, P.J., Shafi, M. and Vere-Jones, D. (1990). Some improvements to conventional importance sampling techniques for coded system using Viterbi decoding. *Electronics Letters*, 26, 802-806.

[2] Chen, S.X. (1993). On the coverage accuracy of empirical likelihood confidence regions for linear regression model. *Annals of Institute of Statistical Mathematics*, 45, 621-637.

[3] Chen, S.X. and Hall, P. (1993). Smoothed empirical likelihood confidence intervals for quantiles. *Annals of Statistics*, 21, 1166-1181.

[4] Chen, S.X. and Hall, P. (1994). On the calculation of standard error for quotation in confidence statements. *Statistics and Probability Letters*, 19 147-151.

- [5] Chen, S.X. (1994). Empirical likelihood confidence intervals for linear regression coefficients. *Journal of Multivariate Analysis*, 49, 24-40.
- [6] Chen, S.X. (1994) Comparing empirical likelihood and bootstrap hypothesis tests. *Journal of Multivariate Analysis*, 51, 277-293.
- [7] Chen, S.X. (1996a) A kernel estimate for density of a biological population using line transect sampling. *Royal Statistical Society Ser. C: Applied Statistics* 45, 135-150.
- [8] Chen, S.X. (1996b) Studying school size effects in line transect sampling using the kernel method. *Biometrics* 52, 1283-94.
- [9] Chen, S.X. (1996c) Empirical likelihood confidence intervals for nonparametric density estimation. *Biometrika*, 83 , 329-341.
- [10] Chen, S.X. and Polacheck, T. (1996) Kernel estimates of mean school size for IWC minke whale data. *Report of International Whaling Commission*, 46 , 341-348.
- [11] Chen, S.X. (1997). Empirical likelihood based kernel density estimation. *Australian Journal of Statistics*, 39, 47-56
- [12] Chen, S.X. (1998). Measurement errors in line transect surveys. *Biometrics*, 54, 899-908.
- [13] Brown, B. M. and Chen, S. X. (1998) Combined Empirical Likelihood. *Annals of Institute of Statistical Mathematic*, 50 , 697-714.
- [14] Brown, B. M. and Chen, S. X. (1999) Beta-Bernstein smoothing for regression curves with compact support. *Scandinavian Journal of Statistics*, 26 , 47-59.
- [15] Chen, S. X. (1999a) Estimation in independent observer line transect surveys for clustered populations. *Biometrics* 55 , No. 3, 754-759.
- [16] Chen, S. X. and Woolcock, J. (1999) A condition for designing bus-route type access site surveys to estimate recreational fishing effort. *Biometrics*, 55, No. 3, 799-804.
- [17] Chen, S. X. (1999b) Beta kernel estimators for density functions. *Computational Statistics and Data Analysis*, 31 , 131-145.
- [18] Chen, S. X. (2000a) Beta kernel smoothers for regression curves. *Statistica Sinica*, 10, 73-91.
- [19] Chen, S. X. (2000b) Animal abundance estimation for independent observer line transect surveys. Special Issue of *Environmental and Ecological Statistics: Statistical Ecology and Forest Biometry* 7 , No. 3, 285-299.
- [20] Chen, S. X. (2000c) Gamma kernel estimators for density functions. *Annals of Institute of Statistical Mathematics*, 52, 471-480.
- [21] Chen, S. X. and Lloyd, C. J. (2000). A non-parametric approach to the analysis of two stage mark-recapture experiments. *Biometrika*, 87, 633-649.

- [22] Chen, S. X. and Qin, Yong Song (2000). Empirical Likelihood confidence interval for a local linear smoother. *Biometrika*, 87, 946-953.
- [23] Chen, S. X. and Cowling, A. (2001). Measurement Errors in Line Transect Surveys where Detection varies with Distance and Size. *Biometrics*, 57, 732-742.
- [24] Chen, S. X. and Qin, Yong Song (2002). Confidence interval based on a local linear smoother. *Scandinavian Journal of Statistics*, 29, 89-99.
- [25] Chen, S. X. and Lloyd, C. J.(2002). Estimation of population size based on biased samples using nonparametric binary regression. *Statistica Sinica*, 12, 505-518.
- [26] Chen, S. X. (2002). Local linear smoothers using asymmetric kernels. *Annals of Institute of Statistical Mathematics*, 54, 312-323.
- [27] Chen, S. X., Yip, P. and Zhou, Y. (2002). Sequential line transect surveys. *Biometrics*, 58, 263-269.
- [28] Chen, S. X., Hardle, W. and Kleinow, T. (2002). An empirical likelihood goodness-of-fit test for diffusions. *Applied quantitative finance*, 259--281, Springer, Berlin.
- [29] Chen, S. X. and Hall, P. (2003). EFFECTS OF BAGGING AND BIAS CORRECTION ON ESTIMATORS DEFINED BY ESTIMATING EQUATIONS, *Statistica Sinica*, 13, 97-109.
- [30] Chen, S. X and Cui, H-J. (2003). An extended empirical likelihood for generalized linear models. *Statistica Sinica*, 13, 69-81.
- [31] Cui, H-J and Chen, S.X. (2003). Empirical likelihood confidence regions for parameter in the error-in-variable models, *Journal of Multivariate Analysis*, 84 (1), 101-115.
- [32] Chen, S. X. and Qin, J. (2003) Empirical likelihood based confidence intervals for data with possible zero observations. *Statistics and Probability Letters*, 65, 29--37.
- [33] Chen, S. X., Haredle, W. and Li, M. (2003). An empirical likelihood goodness-of-fit test for time series. *Journal of The Royal Statistical Society, Series B*, 65, 663-678.
- [34] Chen, S. X., D. H. Y. Leung and Qin, J. (2003) Information Recovery in a Study with Surrogate Endpoints. *Journal of the American Statistical Association*, 98, 1052-1062.
- [35] Chen, S. X. and Tang, C. (2005). Nonparametric Estimation of Value at Risk and the Standard Errors for Financial Returns. *Journal of Financial Econometrics*, 3, 227-255.
- [36] Chen, S.X. and Cui, H. J. (2006) On Bartlett Correction of Empirical Likelihood in the Presence of Nuisance Parameters. *Biometrika*, 93, 215-220.
- [37] Chen, S. X. and Qin, J. (2006) An Empirical likelihood Method in Mixture Models with Incomplete Classifications, *Statistica Sinica* 16, 1101-1115 .
- [38] Chen, S.X. and Cui, H. J. (2007) On the Second Order Properties of Empirical Likelihood for Generalized Estimation Equations. *Journal of Econometrics* to appear.
- [39] Chen, S.X. and J. Gao (2007) An Adaptive Empirical Likelihood Test for Time Series Models. *Journal of Econometrics* to appear.

[40] Chen, S.X., J. Gao and Tang, C. Y. (2004) A test for model specification of diffusion processes, being revised for *Annals of Statistics*.

[41] Chen, S. X. and T. Huang (2005) Nonparametric Estimation of Copula Functions. Being revised for *Canadian Journal of Statistic*.

[42] CHEN, Song Xi and Chiu Min WONG (2006) Smoothed Block Empirical Likelihood for Quantiles of Weakly Dependent Processes, being revised for *Statistica Sinica*

### **Papers under review**

Chen, S.X. (2003). Nonparametric Estimation of Expected Shortfall.

Chen, S. X. and C. Yong Tang (2006): Parameter estimation and bias correction of diffusion processes.

Chen, S. X. and I. Van Keilegom (2006) . Empirical Likelihood Test for a Class of Regression Models.

Chen, S. X., Leung, D. Y. H. and J. Qin. (2006) [Improved Estimation for Surrogate Outcome Data](#).

Wang, D. and S.X. Chen (2006) [Empirical Likelihood for Estimating Equation with Missing Values](#)

Chen, S. X. and L. Peng (2006) [Empirical Likelihood for High Dimensional Data](#).

### **Invited Presentations**

***35th Annual meeting of the Statistical Society of Canada***, St John's, New Foundland. Title to be announced, 10-13 June 2007.

Semiparametric Estimation With Missing Values via Empirical Likelihood, ***Department of Statistics, University of Wisconsin at Madison***, Oct. 11, 2006.

**Estimating equation, missing values and empirical likelihood, (with Dong Wang), An invited talk in 2006 JSM in Seattle.**

Nonparametric Estimation of Copula Function, ***The 2006 International Symposium on Financial Engineering and Risk Management***, Xiamen,China, July 05-06 2006

On bias correction in parameter estimation of diffusion processes, **an invited talk and a member of the International Program Committee of the International Conference on Time Series Econometrics, Finance and Risk**, at University of Western Australia, June 30- July 01 2006.

**A short course on Empirical Likelihood, Institute of Statistique, Univerisite Catholique de Louvain, June-July 2005.**

**Nonparametric Estimation in Biased Sampling, 2005 Applied Statistics Symposium, June, Washington DC.**

**Nonparametric Estimation of Expected Shortfalls, Mathematical Forschungsinstitut Oberwolfach, Nov 14-20<sup>th</sup> 2004, Oberwolfach, Germany.**

**On Nonparametric Specification Test for Continuous Time diffusion Models, ICSA International Statistical Conference, July 2004, NUS, Singapore.**

**Information Recovery in a Study with Surrogate Endpoints. 2004 Applied Statistics Symposium, June, San Diego.**

**An Empirical Likelihood Goodness-of-fit test for Time Series, Quantitative Methods in Finance 2000, Sydney, Australia, December 8-12.**

**Empirical Likelihood Confidence Intervals for Local Linear Smoothers, 2000 International Chinese Statistical Conference Applied Statistics Symposium, June 1-3, 2000, Embassy Suites, Hotel, Piscataway, NJ, USA.**

**Empirical Likelihood for Local Linear Smoothers, Weierstrasse Institute for Applied Analysis and Stochastics, Berlin, 11th November, 1999.**

**Mark Recapture and Biased Sampling, Royal Statistical Society, East Midlands Branch, 14th Oct 1999.**

**Statistical Application in Fisheries, Australian Statistical Society, Victoria Branch, September, 1995.**

***Other Presentations and Seminars/Academic Visits*** (excluding Seminars at home Institutions)

December 1993, Institute of Statistical Mathematics, Tokyo, Japan, A seminar on Empirical Likelihood.

July 1994, one week exchange with Art Owen of Stanford University.

August 1994, Canada, International Biometric Conference, a presentation on Kernel Method for Line Transect Sampling.

August, University of New South Wales, Sydney, a seminar on Empirical Likelihood.

September 1994, University of Tasmania, two seminars on the Bootstrap Method.

Oct 1994, La Trobe University, Kernel Method for Line Transect Sampling.

July 1997, Ocean Research Institute, National Taiwan University, Seminar on Abundance Estimation of Southern Bluefin Tuna.

December 1997 –Jan. 1998, University of Hong Kong, joint research and a seminar on Confidence intervals for nonparametric density estimator. Also a seminar on Smoothing with asymmetric kernels at University of Science and Technology of Hong Kong.

November 1998, One week visit to Centre for Mathematics and Its Applications, Australian National University.

March, 1999, National University of Singapore, a seminar on Local linear smoothing with asymmetric kernels.



June-August, 1999, University of Bath, UK. Academic visit.

September-Oct 1999, University of Nottingham, UK. Academic visit and give an invited address to RSS Midland branch on Biased Sampling.

September, 1999, University of St.-Andrews, Seminar on Nonparametric Methods for Line Transect Surveys.

October, 1999, University of Glasgow, seminar on Empirical Likelihood for Local Linear Estimator.

Oct, 1999, two weeks, Institut de Statistique, Universite Catholique de Louvain. Given a seminar on Bernstein smoothing and Beta Kernels.

November, 1999, three weeks visits to Humboldt-Universitat zu Berlin. Collaboration and an invited address to Institute for Applied Analysis and Stochastics on Empirical Likelihood for Local Linear Estimator.

June 2000, UCLA, Department of Biostatistics, A seminar on Biased Sampling.

November-December, 2000, Centre for Mathematical and Its Applications, Australian National University, collaboration and seminar on An Empirical Likelihood Goodness-of-Fit test for Time Series Models.

July, 2001, Academic Sinica, Taipei, ROC, a presentation on An Empirical Likelihood Goodness-of-Fit test for Time Series Models at the Taipei International Statistical Conference.

August, 2001, Hong Kong, a presentation on Goodness-of-fit tests for Stochastic Volatility Models at the ICSA Statistical Conference.

May 2002, two weeks visit to Department of Mathematics and Statistics, University of Western Australia, joint work with J. Gao and seminar on The use of uncategorized data to improve estimation efficiency in mixture models via empirical likelihood.

June 2002, four week visit to University of South Australia and a seminar on Specification Tests for Diffusion Models.

September, 2002, Beijing Normal University, a seminar on Mark-recapture and Line Transect Survey.

September 2002, Singapore Management University, a seminar on Simultaneous Specification Tests for the Mean and Variance Structures of Time Series Regression.

December 2002, two weeks visit to School of Finance and Economics, Sydney University of Technology.

January 2003, Iowa State University, Simultaneous Tests for the Mean and Variance Specifications of a Time Series Models.

May 2004, Quebec, Canada, A presentation on Nonparametric Estimation of Value at Risk and the Standard Errors for Financial Returns to the Workshop on Modeling Dependence in Finance.

June-July 2004, Visit Applied Mathematics Institute, Chinese Academy of Science, Beijing, seminars on Nonparametric Inference for Financial Risk Measures and Nonparametric Tests for Diffusion Models.

July 2004, Faculty of Management, People University of China, Seminar on Value at Risk.

July 2004, Department of Statistics and Mathematical Finance, Beijing Normal University, a seminar on Nonparametric Inference for Financial Risk Measures.

Oct 2004, University of Iowa, seminar on Nonparametric Specifications Tests for Continuous-Time Diffusion Models.

Oct 2004, North-Western University, a presentation to the Mid-West Econometric Group Annual Meeting on the Second Order Properties of Empirical Likelihood for Generalized Estimation Equations .

### Professional Service

#### ***Journal Service***

Have acted as referees for various academic journals including Annals of Institute of Statistical Mathematics (3), Annals of Statistics (5), Australian and New Zealand Journal of Statistics (3), Biometrika (2), Biometrics (3), Communication in Statistics—theory and method (2), Computational Statistics and Data Analysis (1) , Econometrica (4) , Environmental and Ecological Statistics (2), Journal of American Statistical Association (3), Journal of Statistical Planning and Inference (1), Journal of Multivariate Analysis (2), Journal of Time Series Analysis (1) , Sankya (2), Scandinavian Journal of Statistics (1), Statistical Sinica (4), Journal of the Royal Statistical Society, Series B (2), Journal of Econometrics (1), Econometric Theory (1),

Have been acted as examiners of Ph.D theses from Australian National University (2), MSc theses from University of Tasmania (1), La Trobe University (1) and National University of Singapore (6).

#### ***Departmental Service***

Ph.D Prelim. Exam Committee, Fall 2004 to present.

Strategic Planning Committee, Fall 2004- Spring 2005.