CHENG YONG TANG

CONTACT INFORMATION

Business School
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APPOINTMENTS

- 08/2012– Assistant Professor of Business Analytics
  Business School, University of Colorado Denver
- 06/2008–08/2013 Assistant Professor and
  Associate Professor (tenured) in Statistics
  Department of Statistics and Applied Probability
  National University of Singapore

EDUCATION

08/2004–05/2008 Ph.D. in Statistics, Iowa State University, GPA: 4.0/4.0.

09/2001–09/2003 M.Sc. in Statistics, National University of Singapore.

09/1996–07/2001 B.Sc. in Management Science & B.E. (Dual) in Computer Science, University of Science and Technology of China.

RESEARCH INTERESTS

- Methods for big and small data analysis:
  - High-dimensional data analysis
  - Empirical likelihood
  - Financial statistics and Econometrics
  - Sampling statistics and analysis of missing data
  - Nonparametric statistical methods

PUBLICATIONS

1. LIU, C. AND TANG, C. Y. (2014). A quasi-maximum likelihood approach for integrated covariance matrix estimation with high frequency data. *Journal of Econometrics*. **To appear.**
2. ZHANG, W., LENG, C. AND TANG, C. Y. (2014). A joint modeling approach for longitudinal studies. *Journal of the Royal Statistical Society, Series B.* **To appear.**
3. TANG, C. Y. AND WU, T. T. (2014). Nested coordinate descent algorithms for empirical likelihood. *Journal of Statistical Computation and Simulation.***To appear.**
4. CHANG, J., TANG, C. Y. AND WU, Y. (2013). Marginal empirical likelihood and sure independence screening. *Annals of Statistics.* **41** 2132-2148.
5. LIU, C. AND TANG, C. Y. (2013). A state space model approach to integrated covariance matrix estimation with high frequency data. *Statistics and Its Interface (Special FERM2012 Issue, invited article).* **6** 463-475

6. TANG, C.Y. AND FAN,Y. (2013). Discussion of "Large covariance estimation by thresholding principal orthogonal complements". *Journal of the Royal Statistical Society, Series B.* **75** 671.
7. FAN, Y. AND TANG, C. Y. (2013). Tuning parameter selection for high dimensional penalized likelihood. *Journal of the Royal Statistical Society, Series B.* **75** 531-552.
8. CHEN, S. X., QIN, J. AND TANG, C. Y. (2013). Mann-Whitney test with adjustments to pre-treatment variables for missing values and observational study. *Journal of the Royal Statistical Society, Series B.* **75** 81-102.
9. TANG, C. Y. AND QIN, Y. (2012). An efficient empirical likelihood approach for estimating equations with missing data. *Biometrika.* **99** 1001-1007
10. LENG, C. AND TANG, C. Y. (2012). Sparse matrix graphical models. *Journal of the American Statistical Association.* **107** 1187-1200.
11. LENG, C. AND TANG, C.Y. (2012). Penalized empirical likelihood and growing dimensional general estimating equations. *Biometrika.* **99** 703-716.
12. TANG, C. Y. AND LENG, C. (2012). An empirical likelihood approach to quantile regression with auxiliary information. *Statistics and Probability Letters.* **82** 29-36.
13. TANG, C. Y. AND LENG, C. (2011). Empirical likelihood and quantile regression in longitudinal data analysis. *Biometrika.* **98** 1001-1006.
14. CHEN, S. X. AND TANG, C. Y. (2011). Nonparametric regression with discrete covariates and missing values. *Statistics and Its Interface.* **4** 463-474.
15. CHEN, S. X. AND TANG, C. Y. (2011). Properties of census dual system population size estimators. *International Statistical Review.* **79** 336-361.
16. LENG, C. AND TANG, C. Y. (2011). Improving variance function estimation in longitudinal data analysis. *Canadian Journal of Statistics.* **39** 656-670.
17. TANG, C. Y. AND LENG, C. (2010). Penalized high dimensional empirical likelihood. *Biometrika.* **97** 905-920.
18. CHEN, S. X., TANG, C. Y. AND MULE, V. T. (2010). Local post-stratification in dual system accuracy and coverage evaluation for the U.S. Census. *Journal of the American Statistical Association.* **105** 105-119.
19. TANG, C. Y. AND CHEN, S. X. (2009). Parameters estimation and bias correction for diffusion processes. *Journal of Econometrics.* **149** 65-81.
20. CHEN, S. X., GAO, J. AND TANG, C. Y. (2008). A test for model specification of diffusion processes. *Annals of Statistics.* **36** 167-198.
21. CHEN, S. X. AND TANG, C. Y. (2005). Nonparametric inference of value at risk for dependent financial returns. *Journal of Financial Econometrics.* **3** 227-255.

MANUSCRIPTS

1. CHANG, J., TANG, C. Y. AND WU, Y. (2013). Local independence feature screening for nonparametric and semiparametric models by marginal empirical likelihood.
2. WU, T. T. , LI, G., AND TANG, C. Y. (2013). Empirical likelihood and variable selection for censored linear regression.
3. TANG, C. Y. AND FAN, Y. (2013). Precision matrix estimation by inverse principal orthogonal decomposition. *Under revision for Biometrika.*

Teaching

University of Colorado Denver

- Spring, 2014 DSCI 6828 Data Mining:Predictive Modeling(12 Students).
- Spring, 2014 BUSN 6530 Data Analysis for Managers (38 Students).
- Fall, 2013 BUSN 6530 Data Analysis for Managers (2 sessions, 80 Students).
- Spring, 2013 BUSN 6530 Data Analysis for Managers (2 sessions, 45 Students).
- Fall, 2012 BUSN 6530 Data Analysis for Managers (33 Students).

National University of Singapore

- Semester 2, 2011-2012 ST4245 Statistical Methods for Finance (74 Students).
- Semester 2, 2010-2011 ST4245 Statistical Methods for Finance (62 Students).
- Semester 1, 2010-2011 ST5210 Multivariate Data Analysis (89 Students).
- Semester 2, 2009-2010 ST4245 Statistical Methods for Finance (43 students).
- Semester 1, 2009-2010 ST5201 Basic Statistical Theory (72 students).
- Semester 2, 2008-2009 ST4245 Statistical Methods for Finance (30 students).
- Semester 1, 2008-2009 ST5201 Basic Statistical Theory (59 students).

Iowa State University

- Fall, 2007 Stat 305 Engineering Statistics
- Spring, 2007 Stat 305 Engineering Statistics

Elected Membership

- Elected member, International Statistical Institute (ISI), 2012

Awards and Honors

- Young Scientist Award, Faculty of Science, National Univ. of Singapore, 2012
- Teaching Excellence Award, Faculty of Science, National Univ. of Singapore, 2009
- IMS Laha Travel Award, 2008
- Research Excellence Award, Iowa State University, 2008
- Teaching Excellence Award, Iowa State University, 2008
- Student Paper Award for JSM 2008 (ASA Sections on Social Statistics, Government Statistics, and Survey Research Methods)
- Student Paper Award for JSM 2005 (ASA Section on Risk Analysis)

Funded Research

1. "Regularization and variable selection in high dimensional computer intensive statistical methods". Singapore Ministry of Education Academic Research Fund. **PI**, S$50,800. 08/2011-07/2014.
2. "Assessing the uncertainties in predicting default probabilities". National University of Singapore, Risk Management Institute Research Grant. **PI**, S$60,000. 07/2011-07/2013.
3. "On the asymptotic bias in estimating continuous-time financial econometric models and its application ". Singapore Ministry of Education Academic Research Fund. **PI**, S$120,000. 07/2008-07/2012.

Pending grants

1. "Collaborative Research: Battery Life Cycle Management Optimization through Building-in Performance and Innovative Sensor-driven Prognostics". Co-PI, NSF-MES, 2014.
2. "Collaborative Research: Be Certain About Uncertainty – A General Framework for Quantifying Uncertainties in Corporate Default Predictions". PI, NSF-SES, 2014.

UNFUNDED GRANT PROPOSALS

1. "Empirical Likelihood Approach for High-dimensional Data Analysis". NSF-DMS, 2012.
2. "Collaborative Research: Beyond Default Probabilities – Investigating the Impacts of Uncertainties in Credit Risk Evaluation". PI, NSF-SES, 2013.
3. "CAREER: Topics on Statistical Methods for Covariance and Correlation Matrices with Large and Complex Data Sets." PI, NSF-DMS, 2013.

CONSULTING WORKS

1. Survey design, statistical analysis and missing data treatment. DEPARTMENT OF SOCIAL WORK, NATIONAL UNIVERSITY OF SINGAPORE. 07/2011.
2. Survey design, statistical analysis and missing data treatment for the Singapore national elder gambling research. DEPARTMENT OF SOCIAL WORK, NATIONAL UNIVERSITY OF SINGAPORE. FUNDED BY SINGAPORE MINISTRY OF COMMUNITY DEVELOPMENT, YOUTH AND SPORTS. 07/2010-06/2011.
3. Lecturer for FE5210 Research Methods in Finance. MASTER OF FINANCIAL ENGINEERING PROGRAM, RISK MANAGEMENT INSTITUTE OF NATIONAL UNIVERSITY OF SINGAPORE. Semester 2, 2009-2010 and Semester 2, 2010-2011.

INVITED TALKS

1. "A joint modeling approach for longitudinal studies". *The Ninth ICSA International Conference: Challenges of Statistical Methods for Interdisciplinary Research and Big Data*. Hong Kong, China. December, 2013.
2. "A joint modeling approach for longitudinal studies". *Departmental Seminar, Penn State University*. State College, PA. December, 2013.
3. "Local post-stratification in dual system surveys for censuses". *59th ISI world Statistics Congress*. Hong Kong, China. August, 2013.
4. "Marginal empirical likelihood and sure independence screening". *2013 IMS-China International Conference on Statistics and Probability 2013*. Chengdu, China. July, 2013.
5. "A quasi-maximum likelihood approach for covariance matrix with high frequency data". *Workshops on Financial Time Series Analysis: High-dimensionality, Non-stationarity and the Financial Crisis*. Singapore. June, 2012.
6. "Empirical likelihood and quantile regression in longitudinal data analysis". *International Conference on Advances in Probability and Statistics–Theory and Applications: A Celebration of N. Balakrishnan's 30 years of Contributions to Statistics*. Hong Kong SAR, China. December, 2011.
7. "Mann-Whitney test with adjustments to pre-treatment variables and observational studies". *IMS-China International Conference on Statistics and Probability 2011*. XiAn, China. July, 2011.
8. "Tuning parameter selection in high dimensional penalized likelihood". *Interna-*

tional Conference on High Dimensional Statistics: Advances and Challenges. Singapore. May, 2011.

9. "Penalized empirical likelihood and growing dimensional general estimating equations". *2011 International Conference on Probability, Statistics and Data Analysis*. Raleigh, NC. April, 2011.
10. "Mann-Whitney test with adjustments to pre-treatment variables and observational studies". Department of Statistics, North Carolina State University, Raleigh, NC. April, 2011.
11. "Penalized empirical likelihood and growing dimensional general estimating equations". *The Eighth International Chinese Statistical Association*. Guangzhou, China. December, 2010.
12. Invited discussant of "Bias in estimating linear multivariate diffusions". *Fourth Annual Risk Management Conference*. Singapore. July 2010.
13. "Penalized empirical likelihood and growing dimensional general estimating equations". *International Conference on Statistical Analysis of Complex Data*. Kunming, China. July, 2010.
14. "Two sample Mann-Whitney test with adjustments to pre-treatment variables". *2010 International Conference on Quantitative Methods in Business Applications*. Beijing, China. June, 2010.
15. "A Test for Model Specification of Diffusion Processes". *Second Singapore Conference on Quantitative Finance*. Singapore. March, 2010.
16. "Parameter estimation for diffusion processes". *First Singapore Conference on Statistical Finance*. Singapore. October, 2009.
17. "Parameter estimation for diffusion processes". *2009 International Conference on Financial Statistics and Financial Econometrics (ICFSFE)*. Chengdu, China. July, 2009.
18. "Local post-stratification in dual system accuracy and coverage evaluation for US Census". *Department of Statistics, Singapore*. November, 2008.
19. "Parameters estimation and bias correction for diffusion processes". *School of Economics, Singapore Management University*. September, 2008.
20. "Parameters estimation and bias correction for diffusion processes". *Conference on Likelihood Methods in Finance*. Princeton University. October, 2007.
21. "A nonparametric approach to US Census population size estimation". *US Census Bureau Seminar*. December, 2007.

Contributed Talks and Presentations

1. "A joint modeling approach for longitudinal studies". *ENAR 2013 Spring Meeting.* Orlando, Florida. March, 2013.
2. "Two sample Mann-Whitney test with adjustments to pre-treatment variables". *Joint Statistical Meetings 2010.* Vancouver, Canada. TOPIC CONTRIBUTED. August, 2010.
3. "Penalized high dimensional empirical likelihood". *13th Meeting of New Researchers in Statistics and Probability*. Vancouver, Canada. July 2010.
4. "Local post-stratification in dual system accuracy and coverage evaluation for the

U.S. Census". *12th Meeting of New Researchers in Statistics and Probability*. Baltimore MD. July 2009.

5. "A nonparametric approach to US Census population size estimation". *Joint Statistical Meetings 2008*. Denver, Co. TOPIC CONTRIBUTED. August 2008. (*This paper received the Student Paper Award for JSM 2008.*)
6. "Parameters estimation and bias correction for diffusion processes". *2008 World Congress in Probability and Statistics*. Singapore. June 2008.
7. "Local post-stratification and diagnostics in dual system estimation for US Census". *2008 ENAR Meeting*. Washington DC. March 2008.
8. "Local post-stratification and diagnostics in dual system estimation for US Census". *Joint Statistical Meetings 2007*. Salt Lake City, Utah. August 2007.
9. "Local post-stratification and diagnostics in dual system estimation for US Census". *2007 WNAR/IMS Meeting*. Irvine, CA. June 2007.
10. "Nonparametric regression with missing responses and its applications in US Census". *Statistics Spring Research Conference 2007*. Ames, IA. May 2007.
11. "Parameters estimation and bias correction for diffusion processes". *Joint Statistical Meetings 2006*. Seattle, WA. August 2006.
12. "Nonparametric inference of Value-at-Risk for dependent financial returns". *Joint Statistical Meetings 2005*. Minneapolis, MN. August 2005. (*This paper received the Student Paper Award for JSM 2005 in ASA Section on Risk Analysis*)
13. "Nonparametric estimation of Value-at-Risk and its standard error for dependent financial returns". *Quantitative Methods in Finance 2002*. Cairns, Australia. December 2002.

TRAVEL GRANTS AND OTHER AWARDS

- YUMPS travel grant, University of Colorado Denver (2013)
- Student Scholarship for Statistics Spring Research Conference 2007 (SRC 2007)
- Graduate Students Tuition Awards, Iowa State University
- Student Travel Award for JSM 2006 (ASA Section on Survey Research Methods)
- Professional Advancement Grants (Travel Support), Iowa State University, (2005, 2006, 2007, 2008)
- Research Scholarship, National University of Singapore, 2001-2003
- Outstanding Undergraduate Student Scholarships, University of Science and Technology of China (1996, 1997)
- First Class Award, National High School Mathematics Contest, China (1995)

STUDENTS SUPERVISED

- Cheng Liu, PhD at National University of Singapore (2009-2013). Covariance matrix estimation with high frequency financial data. Now Research Fellow at Singapore Management University.

UNIVERSITY SERVICES

- Course outcome assessment coordinator of BUSN 6530 at University of Colorado Denver.

- Graduate curriculum committee at University of Colorado Denver.
- Graduate scholarship committee at University of Colorado Denver.
- Consulting center committee at National University of Singapore.
- Teaching excellence committee at National University of Singapore.

PROFESSIONAL SERVICES

- Organizer of an Invited Session for ICSA 2012 Applied Statistics Symposium.
- Organizer of a Topic Contributed Session for JSM 2010.
- Reviewer for *Annals of Statistics, Annals of Applied Statistics, Biometrika, Biometrics, Canadian Journal of Statistics, Statistical Science, Econometrica, Test, Econometric Journal, Journal of the American Statistical Association, Journal of Business and Economic Statistics, Journal of Econometrics, Journal of Economic Inequality, Journal of Multivariate Analysis, Journal of Machine Learning Research, Journal of Nonparametric Statistics, Journal of Official Statistics, Journal of Statistical Planning and Inference, Mathematical Reviews, Science China, Scandinavian Journal of Statistics, Statistica Sinica, Statistical Modeling, Statistics and Its Interface, Applied Stochastic Models in Business and Industry, Computational Statistics and Data Analysis and, Statistics and Probability Letters.*
- External assessor for Research Grants Council (RGC) of Hong Kong.
- Thesis examiner, National University of Singapore.
- External thesis examiner for Nanyang Technology University, Singapore.

COMPUTER SKILLS

- Statistical Computing: C/C++, R/Splus, SAS, Matlab, Winbugs, Mathematica.
- Operation System: MS Windows, Linux/Unix.

PROFESSIONAL AFFILIATION

- Elected Member, International Statistical Institute (ISI)
- Member, American Statistical Association (ASA)
- Member, Institute of Mathematical Statistics (IMS)

PH.D. COMMITTEE

- **Major Professor:**
  - Dr. Song Xi Chen
- **Thesis committee Members:**
  - Dr. K.B. Athreya
  - Dr. W.A. Fuller
  - Dr. Cindy L. Yu
  - Dr. Tobias Justin

REFERENCE

- Available upon request.