Curriculum Vitae (July, 2011)

Philip E. Cheng 程 爾 觀

Institute of Statistical Science, Academia Sinica

Career Experience

Research Fellow, Institute of Statistical Science, Academia Sinica, 1987-

Ph.D., Statistics, 1980, Florida State University

Assistant Professor, Dept. of Math., University of Houston, 1980-1983

Associate Research Fellow, Institute of Statistical Science, 1983-1987

Visiting Scholar, Dept. Biostat., University of Michigan-Ann Arbor, Fall 1986.

Visiting Scholar, Dept. Stat., University of Wisconsin-Madison, spring 1987.

Visiting Scholar, Dept. Stat., Stanford University, summer 1987.

Adjunct Professor, Inst. Stat., National Central University, 1987-93.

Adjunct Professor, Inst. Stat., National Chengchi University, 1987-93.

Visiting Scholar, Dept. Stat., Harvard University, Fall 1994.

Adjunct Professor, Inst. of Appl. Math., National Donghwa University, spring 1995 - spring 1998.

Adjunct Professor, Inst. of Stat., National Central University, 1987-94, 1998-

Visiting Professor, Beijing Normal University and Hong Kong Baptist University - United International College, spring 2008, fall 2009.

Invited Presentations (since 2006)

2006.03. Dept. of Stat., Tunghai University, "*Power analysis for testing hypotheses with categorical data*".

2006.10. Dept. of Stat., Tienjing University of Finance and Economics, *"Likelihood ratio tests with 2x2xK contingency tables*".

2006.10. Dept. of Stat., Shan-Dong Economics University, "*Data information and testing hypothesis in contingency tables*".

2006.10. Dept. of Stat., Peiking University, "*Data information in contingency tables: A note on hierarchical log-linear models*".

2007.06. The 2007 Taipei Symposium, "*Testing association: A two-step test and the Cochran-Mantel-Haenszel test*."

2007.07. Pacific Rim Objective Measurement Symposium (*PROMS 2007, Plenary Speech*), "*Linear information models: Another look at DIF*".

2007.10. Institute of Statistics and Computational Intelligence, Beijing Normal University and Hong Kong Baptist University, United International College, "*Testing hypotheses with contingency tables*".

2007.11. Department of Statistics, National Cheng-Kung University, Tainan, "*Likelihood ratio tests for categorical data analysis*".

2008.09. Department of Statistics, University of Warwick, Coventry, England, "*Linear Information Models*: *An Introduction*".

2008.11. Department of Statistics, National Cheng-Chi University, Taipei, "*Linear Information Models and Log-linear Models*".

2009.01. The 6th Across Strait Statistics Conference, Nanjing, China, "*Efficient Imputation Methods with Data Missing at Random*".

2009.06. The 18th South Taiwan Statistics Conference, National Sun Yat-Sen University, Kaohsiung, "*Assessment of DIF for Cognitive Abilities Screening Instrument*".

2009.07. The 2nd IMS-China International Conference on Statistics and Probability, Weihai, China, "*Likelihood Ratio Tests with 3-Way Tables*".

2009.07. Department of Statistics, North-Eastern Normal University, Charncuen, China, "*Assessment of DIF for Cognitive Abilities Screening Instrument*".

2010.05. 中華機率統計學會年會，國立東華大學, "*Testing Hypotheses in Three-Way Tables*".

2010.05. 國立台南大學，測驗統計研究所, "*Differential Item Functioning: An Application of Linear Information Models.*".

2010.07. The 7th Across-Strait Statistics Conference，國立成功大學，"*A Note on Nonparametric Imputation Methods*".

2010.07. The First Joint Biostatics Symposium, Beijing Renmin University, "*A Remark on the Cochran-Mantel-Haenszel Test*".

2010.11.第三届国际金融数据挖掘研讨会 ，廈門大學經濟學院，計劃統計系："類別資料之統計研究：幾何分析觀念."

2010.12. The 8th International Chinese Statistical Association Conference, Session Organizer: *Model Selection with Correlated Data*; Invited Speech: "*Another Look at Log-linear Modeling using Data Information*", Guangzhou, China.

2011.07. 第八届数据挖掘与商业智能研讨会暨海峡两岸应用统计研讨会："Credit Data Analysis via Information Mining", 首都經貿學院, Beijing, China.

Research Interests (since 1994)

Categorical Data Analysis; Educational Statistics; Missing Data Analysis; Nonparametric Regression; Psychometrics; Statistics for Brain fMRI (functional Magnetic Resonance Imaging).

Selected Publications (since 1984)

1. Strong Consistency of Nearest Neighbors Regression Function Estimators. (1984). *J. Multivariate Anal*., **15**, No. 1, 63-72.
2. Maximum Likelihood Estimation of Survival Function under the Koziol-Green Proportional Hazards Model. (1987). *Stat. & Prob. Letters*, **5**, No. 1, 75-80. Cheng, P.E.* and Lin, G.D.
3. Nonparametric Estimation of Survival Curve under Dependent Censorship. (1989). *J. Stat. Plann. & Inf*., **23**, 181-191.
4. Nonparametric Estimation of Mean Functional with Data Missing at Random. (1994). *J. Amer. Stat. Assoc.*, **89**, 81-87.
5. Equipercentile Equating via Data Imputation Techniques. (1995). *Psychometrika,* **60**, No. 1, 119-136. Liou, M.* and Cheng, P.E.
6. Asymptotic Standard Errors of Equipercentile Equating. (1995). *J. Edu. & Behav. Stat*,. **20**, No. 3, 261-288. Liou, M.* and _Cheng, P.E.
7. A Note on Strong Convergence Rates in Nonparametric Regression. (1995). *Stat. & Prob. Letters,* **24**, No. 4, 357-364.
8. Estimation of Distribution Functions and Quantiles with Missing Data. (1996). *Statistica Sinica*, **6**, 63-78. Cheng, P.E.* and Chu, C.K.
9. Standard Errors of the Kernel Equating Methods under the Common-Item Design. (1997). *Appl. Psychol. Measurement,* **21**, 349-359. Liou, M.*, Cheng, P.E. and Johnson, E.G.
10. Using Repeaters for Estimating Comparable Scores. (1999). *British J. Math. & Stat. Psychol*., **52**, 273-284. Liou, M.* and Cheng, P.E.
11. Marcinkiewicz Strong Laws for Linear Statistics. (2000). *Stat. & Probab. Lett.*, **46**, 105-112. Bai, Z.D. and Cheng, P.E.*
12. Estimation of Trait Level in Computerized Adaptive Testing. (2000). *Appl. Psychol. Meas*., **24**, No. 3, 257-265. Cheng, P.E. and Liou, M.*
13. Estimating Comparable Scores Using Surrogate Variables. (2001). *Appl. Psychol. Meas*., **25**, 197-207. Liou, M.*, Cheng, P.E. and Li, M.Y.
14. Computerized Adaptive Testing Using the Nearest Neighbors Criterion. (2003). *Appl. Psychol. Meas*., **27**, 204-216. Cheng, P.E. and Liou, M.*
15. Bridging Functional MR Images and Scientific Inference: Reproducibility Maps. (2003). *Journal of Cognitive Neuroscience*, **15**, 935-945. Liou, M.*, Su, H.r., Lee, J.D., Cheng, P.E., Huang, C.C. and Tsai, A.C. *(paper received New Perspective in fMRI Research Award, 2003, fMRIDC*).

16. A Method for Generating Reproducible Evidence in fMRI Studies. (2006). *NeuroImage*, **29**, 383-395. Liou, M.*, Su, H.r., Lee, J.D., Aston, J., Tsai, A.C. and Cheng, P.E.
17. Data Information in Contingency Tables: A Fallacy of Hierarchical Log-linear Models. (2006). *Journal of Data Science*, **4**, 387-398. Cheng, P.E.*, Liou, J.W., Liou, M. and Aston, J.
18. Linear Information Models: An Introduction. (2007). *Journal of Data Science*, **5**, 297-314. Cheng, P.E.*, Liou, J.W., Liou, M., and Aston, J.
19. Information Identities and Testing Hypotheses: Power Analysis for Contingency Tables. (2008). *Statistica Sinica*, **18**, 535-558. (*TR*, 2005-02, *ISSAS*). Cheng, P.E., Liou, M., Aston, J.A.D.*, and Tsai, A.C.
20. Beyond p-values: Averaged and reproducible evidence in fMRI Experiments. (2009). *Psychophysiology*, **46**, 367-378. Liou, M.*, Su, H.R., Savostyanov, A.N., Lee, J.D., Aston, J., Chuang, C.H., and Cheng, P.E.
21. MR Image Segmentation using a Power Transformation Approach. (2009). *IEEE Transactions on Medical Imaging*, **28**, 894-905. Lee, J.D., Su, H.R., Cheng, P.E.*, Liou, M., Aston, J., Tsai, A.C. and Chen, C.Y.
22. Likelihood Ratio Tests with Three-Way Tables. (2010). *J. Amer. Statist. Assoc.*, **105**, 740-749. Cheng, P.E., Liou, M. and Aston, J.A.D.*
23. A Comparison Study of Nonparametric Imputation Methods. (2011). *Stat. and Computing*, in press, Ning, J.H. and Cheng, P.E.*

Special Research Findings (since 2006)

"Invariant Pythagorean Laws of Relative Entropy in Testing Hypotheses", as an original observation on the foundation of statistical inference (article [19] above), yields three results: **1**. the debate between Berkson (1979, *JSPI*) and Yates (1984, *JRSS-A*) on the conservatism of Fisher's exact test (1934) is shown to be pointless; **2**. the notable Cochran-Mantel-Haenszel (1954, 1959) test is found to be logically incomplete, and the two-step likelihood ratio test is provided as a remedy (article [22] above); **3**. the theory of hierarchical log-linear models is supplemented with "the correct geometry of linear information models" (articles [17] [18] above).

Professional Services

- JSM Session Chairperson: *Nonparametric Curve Estimation,* 1987, San Francisco.
- Co-Organizer: *Workshop on Nonparametric Function Smoothing*; March, 1993, Academia Sinica.

- JSM Session Chairperson: *functional Magnetic Resonance Imaging* (fMRI), 2005, Minneapolis.
- ISI Invited Session Discussant: *Brain Neural Imaging*: 2007, Lisbon.
- The 8th ICSA Conference, Invited Speaker and Session Organizer. 2010, Guangzhou, China.
- Review Service (2005-present): AISM, APM, Biometrika, CJS, CIS-TM, Entropy, Hong Kong RGC, JASA, JES, JMVA, JNS, JSPI, Science in China, Statistics, Stat. Sinica, Stat. Med., etc.
- Supervise twelve M.S. students in statistics at NCCU, TKU, NCU, NDHU, in Taiwan, from 1985 to 1998.

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