Si Cheng

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Education

B.S. Mathematics and Applied Mathematics, Tongji University, Shanghai, China, 2012-2016.
GPA: 91.58/100

M.S. Biostatistics, Yale University, New Haven, CT, 2016-2018 (expected).
GPA: 4.0/4.0

Research Experience

Research Assistant

Department of Biostatistics, Yale University — January 2017 to present
Supervisor: Forrest W. Crawford, Ph.D.

Studied consistency theories of cardinality estimation, including the German tank problem, the network scale-up estimator, the benchmark multiplier method, multi-sample capture-recapture, query models, etc.

Formalized a unifying framework with different asymptotic regimes to investigate large-sample behaviors of cardinality estimators under varying assumptions, incorporating the notion of increasing-domain asymptotics in spatial statistics

Hypothesized and proved consistency results for cardinality estimators under the proposed asymptotic framework

Developed an analytical expression of the bias with respect to network structures in linear simultaneous auto-regressive models for social contagion, and generalized the result to non-linear settings and temporal lag models

Undergraduate Thesis

School of Mathematical Sciences, Tongji University, Shanghai, China — January 2016 to June 2016
Supervisor: Chunjing Li, Ph.D.

Studied the convergence theories of scattered and lattice grid interpolation, investigated discrete and continuous radius basis function interpolation schemes on block matrices to allow for flexible magnification ratio and to reduce computational complexity

Established global and local distortion measures to assess the fidelity of image magnification algorithms: global measure based on principal component analysis and average gray level comparison, and local measure based on jump detection and Monte Carlo simulation

Selected optimal basis and parameter, conducted sensitivity analysis and complexity assessment

Publications

Proceedings

Li, C., **Cheng, S.**, Chen, X., Zhu, W. and Hu, J. Indication and detection of global fidelity of block image magnification based on radial basis function interpolation. 2016 6th International Conference on Digital Home (ICDH). IEEE, 2016.

Working papers

Cheng, S., Eck, D. J. and Crawford, F. W. Estimating the size of a hidden finite set: asymptotic behavior of estimators. *Working paper*, 2017.

Cheng, S. and Crawford, F. W. Simultaneous auto-regressive models for peer effects. *Working paper*, 2017.

Eck, D. J., **Cheng, S.** and Crawford, F. W. Asymptotic properties of capture-recapture estimators. *Working paper*, 2017.

Work Experience

Business Intelligence Analyst Intern — November 2015 - March 2016
Electronic Arts, Shanghai, China

Conducted regression analysis for key performance metrics using SPSS and Excel

Optimized performance dashboards to reduce data redundancy

Generated descriptive statistics, conducted graphical analysis and compiled statistical reports

Selected Awards & Honors

Colin White Memorial Scholarship — November 2017
awarded to one student in Yale Department of Biostatistics every year

Outstanding Graduate of Tongji University — June 2016
awarded to 5% of all graduates

Outstanding Undergraduate Thesis — June 2016
titled "Image magnification algorithms using radial basis function interpolation on block matrices"

Outstanding Student Scholarship — October 2013, 2014, 2015

Software Skills

R, SAS, Matlab, SQL, C#, C++