

Xinyue Chang

DATA SCIENCE · FUNCTIONAL DATA · SPATIAL ANALYSIS

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Education

Iowa State University (ISU)

Ames, IA

PHD IN STATISTICS

Aug. 2016 – Aug. 2020

- GPA 3.94/4.0 including courses: Nonparametric Methods in Statistics, Advanced Spatial Statistics, Modern Multivariate Statistical Learning, Machine Learning, Theory and Applications of Sample Surveys.

University of Minnesota, Duluth (UMD)

Duluth, MN

M.S. IN APPLIED AND COMPUTATIONAL MATHEMATICS

Aug. 2014 – May 2016

- Minor in Computer Science, Overall GPA: 3.97/4.0, Major GPA: 4.0/4.0

Harbin Institute of Technology (HIT)

Harbin, China

B.ENG. IN AUTOMATION

Aug. 2010 – Jun. 2014

- Overall GPA: 89.1/100, Major GPA: 90.72/100, Rank: 8% (14/179)

Skills

Programming	R, Python, SAS, Matlab, Shell Script, C++, SQL
Software	RStudio, Mathematica, ArcGIS, SPSS, JMP
Reporting	R Shiny, HTML, \LaTeX
Languages	English, Chinese

Research Experience

Regression of Sparse Asynchronous Longitudinal Data via LASSO

Ames, IA

PHD THESIS

Jun. 2018 – PRESENT

- Utilized sparse FPCA techniques to calibrate asynchronous longitudinal data, proposed a BLUP(FullPACE) for principle component scores in calibration to achieve same estimates and asymptotic properties.
- Modified the typical LASSO procedure for doing regression with asynchronous longitudinal data, simulations showed better selection results and more accurate estimations than other methods available.

Imputation for Orbiting Carbon Observatory-2 (OCO-2) Data

Ames, IA

PHD THESIS

Feb. 2018 – PRESENT

- Developed a 2-step procedure including FPCA and Kriging for imputing spectral radiance in small missing areas with an acceptable accuracy.
- Proposed a model to simulate the mixing process of radiance on water and land, developed an unmixing algorithm for correcting the given unreliable and bad land fractions in selected mixing locations.
- To estimate space-time covariance function on sphere for imputation in large missing areas.

Test of Complete Spatial Randomness on Networks

Duluth, MN

MASTER THESIS

Jun. 2015 – Mar. 2016

- Derived a closed-form formula for the cumulative distribution function of inter-event distance on a regular grid network by assuming complete spatial randomness.
- Performed a Monte Carlo method using inter-event distances or nearest-neighbor distances to test complete randomness of a spatial point pattern on network.
- Identified the vehicle crash pattern on the Minnesota major road as a cluster process.

Work Experience

Center for Survey Statistics and Methodology

Ames, IA

RESEARCH ASSISTANT

Jun. 2018 – PRESENT

- Proposed a robust functional approach based on sparse multivariate FPCA and CUSUM to detect the starting and ending years of gradual change in urbanization process by using three indices in Landsat data, performed better than the existing regression method in terms of accuracy within one year tolerance.
- Improved STFIT imputation algorithm for satellite image data in two aspects: estimation of pixel-wise nonstationary temporal mean function and spatial effect estimation for completely missing images, enabled water classification to outperform JRC on capturing temporal change and prediction in small area.

After Inc.

Norwalk, CT

R SHINY DEVELOPER (REMOTE)

Aug. 2017 – May 2018

- Develop client reports with R Shiny and other tools: manipulated data and generated shiny reports by templates, created and modified reports according to clients' requirements.
- Create reporting templates: created Python-written templates for heatmap and serial range diagnostics reports, maintained and upgraded templates regularly.
- Research new Shiny features and document best practices: participated in developing survival analysis app and early warning app, developed a general framework for doing the same modification/editing in multiple R files, customized layout of shinydashboard and explored visualization package DT, rCharts, etc.

Iowa State University

Ames, IA

LAB TEACHING ASSISTANT

Aug. 2016 – May 2017

- STAT 404 Regression Social & Behavioral Research, STAT 407 Methods of Multivariate Analysis, STAT 201 Principles of Statistics Honors

University of Minnesota, Duluth

Duluth, MN

DISCUSSION SECTION TEACHING ASSISTANT

Aug. 2014 – May 2016

- MATH 1160 Finite Mathematics and an Introduction to Calculus, MATH 3280 Differential Equations with Linear Algebra

Publications

Zhuang, Y., **Chang, X.**, Lee, Y. (2018). Board Composition and Corporate Social Responsibility Performance: Evidence from Chinese Public Firms. *Sustainability* 10(8), 2752. DOI: 10.3390/su10082752

Presentations

Oct. 2018, **Detecting the Change-point of Urbanization Process in Landsat Data**, Survey Working Group Seminar, Link

Selected Honors & Awards

2017	Meritorious Research Award , 2018 Advanced Spatial Statistics Course Project	ISU
2017	Award for Experiential Development , Statistics Department	ISU
2016	Outstanding Graduate Student Award , Mathematics & Statistics Department	UMD
2015	Comprehensive Examination Distinction , Mathematics & Statistics Department	UMD
2012	8841 Continuous Influence Scholarship , Control Science and Engineering Department	HIT

Activities

- 2018 **Membership**, American Statistical Association
- 17-19 **Senator**, Graduate and Professional Student Senate at ISU