Yunran Chen

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EDUCATION

Duke University, Durham, North Carolina **08/2017-05/2019**
Master of Science in Statistics GPA: 3.9/4.0
Thesis: Testing Poisson versus Poisson mixtures with applications to neuroscience

Ben-Gurion University of Negev, Be'er Sheva, Israel **07/2017-08/2017**
Summer Exchange Program GPA: 4.0/4.0
Data Mining and Business Intelligence for Cyber Security

Renmin University of China, Beijing, China **09/2013-06/2017**
Bachelor of Science in Statistics GPA: 3.8/4.0
Double degree: Bachelor of Economics 3.8/4.0
Thesis: Pairwise estimation of mixed spatial autoregressive model with sampled network data

MANUSCRIPTS & PRESENTATIONS

- Chen, Y. and S. T. Tokdar. Testing Poisson versus Poisson mixtures with applications to neuroscience **In progress**
- Chen, Y. and A. Volfovsky. Dynamic latent space models for directed networks **In progress**
- Presenter at the AISC Conference (UNC Greensboro) **10/2018**

RESEARCH EXPERIENCE

Research Assistant, Duke University (Advisor: Prof. Surya Tokdar) **05/2018-present**
Title: Testing Poisson versus Poisson mixtures with applications to neuroscience
- Proposed testing to identify Poisson versus Poisson mixtures based on Bayes factor with marginal likelihood estimated by predictive recursion (PR) algorithm
- Developed testing to identify four different kinds of Poisson mixtures by transforming the density estimation to optimization problem using Laplace approximation, and reduced computation by applying predictive recursion gradient (PRG) algorithm
- Reduced computation and facilitated interpretation for practical use by applying two different reparametrizations
- Conducted extensive simulations showing great improvement compared to the traditional testing procedure

Research Assistant, Duke University (Advisor: Prof. Alexander Volfovsky) **05/2018-present**
Title: Dynamic latent space models for directed networks
- Extended bilinear mixed-effects model for a static network to a model for directed dynamic network by allowing asymmetric multiplicative effect and setting each element evolving with time via Gaussian process
- Applied Gibbs sampling scheme with Pólya-Gamma data augmentation strategy
- Conducted extensive simulations and modeled on international interaction data, showing good performance and interpretability

Research Assistant, Renmin University of China (Advisor: Prof. Cunjie Lin) **07/2016-05/2017**
Thesis: Pairwise estimation of mixed spatial autoregressive model with sampled network data
- Applied pairwise maximum likelihood method and used Taylor expansion to convert it to a quadratic function, avoiding calculation of inverse and determinant of large-scale matrix
- Reduced the computation especially for sparse large-scale network because the resulting simplified estimator of autoregression coefficients only contains information from connected pairs
- Won the first prize for Excellent Graduation Thesis

TEACHING EXPERIENCE

Teaching Assistant for STAT650 Social Network for Spring 2019 (Committed)

- Expected to hold weekly lab session, teach undergraduate/graduate students on network analysis using R
- Expected to hold weekly two-hour office hours to help students with homework and in-class problems
- Expected to grade homework and prepare solutions

OTHER EXPERIENCE (Class Projects/ ASA Data Fest/ Mathematical Contest in Modeling)

Data Collection, Cleaning and Visualization

- Web-scraping, API requests, text data cleaning, and spatial data visualization

Statistical Modeling

- Built a Bayesian Hierarchical Model to capture the differences and similarities among different companies to explore how Indeed can better serve its existing customers
- Applied epidemiological models to capture the information diffusion process of Twitter network data
- Adopted a traditional Network Equilibrium Model and Queuing Theory to subsidize and optimize the taxi resource configuration in the context of the Internet
- Extended evaluation criterion of Return on Investment in business to charitable activities by incorporating selected variables and simplified the grant allocation process into a linearly constrained optimization problem

Programming

- Built a shiny app to display movie information, support movie recommendations and allow people searching
- Wrote a Python package for variational inference on Latent Dirichlet Allocation

Neuroscience

- Research Assistant in Neural Basis of Perception Laboratory
- Completed course “Brain and Space” by Duke University on Coursera

HONORS & AWARDS

- ASA NC Chapter and AISC Young Researcher Award **2018**
- Honorable Mention for the 2017-2018 BEST Award for Student Research **2018**
- First Prize for Excellent Graduation Thesis (Undergraduate) **2017**
- Honorable Mention in the Mathematical Contest in Modeling **2016**
- Second prize in the Chinese Undergraduate Mathematical Contest in Modeling **2015**
- Excellent Individual Work in the School of Statistics **2014, 2015**
- Second Prize for Academic Scholarship **2013, 2014**

TECHNICAL SKILLS & INTERESTS

Tools and Programing: R, Python, Matlab, EXCEL VBA, C language, SPSS, Latex, Git
Interests: movies, traveling, trivia, dreams, poems