Sean Chang

CONTACT INFORMATION

Ph.D. Candidate
Department of Statistical Science
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EDUCATION

Ph.D., Statistical Science; **Duke University**, Durham, NC, U.S.A. Est. 2015
Field: Bayesian Statistics. Advisor: Prof. Jim Berger

M.A., Mathematics **Duke University**, Durham, NC, U.S.A. 2011-2013
Field: Probability. Qualifying exam committee: Prof. Richard Durrett

B.S., Mathematics, **National Taiwan University**, Taipei, Taiwan 2006-2010

EXPERTISE

Statistics: Machine Learning, Data Mining, Bayesian Statistics, Markov Chain Monte Carlo
Computer Science & Applied Math: Algorithms & Data Structure, Stochastic Processes, Probability Theory
Programming: Python, C++, C, R, Matlab, SQL, Slang, SecDB, Git, LaTeX, Linux

WORK EXPERIENCE

Summer Associate, **Goldman Sachs**, London, UK July-Sep, 2014
- Created and implemented new methods modeling cross currency swap basis using currency forward. This work has been pushed into the Goldman Sachs production line for daily risk management.

Data Scientist Intern, **Verisk Analytics**, San Francisco, CA May-July, 2014
- Proposed a health care fraud detection algorithm based on reclassifying insurance providers' specialities using random forest. The classification algorithm improved existing one by ten percent.
- Visualizing data and results with the data-driven JavaScript library *d3.js* and *impress.js*

Instructor, **Department of Mathematics, Duke University**, Durham, NC Fall 2012
- Taught Calculus (Math 111L) and managed the work of teaching assistants.
- Received good course evaluations with overall score of 4.0/5.0.

RESEARCH AND PUBLICATIONS

Department of Statistical Science, Duke University, Durham, NC
- *Bayesian statistics*: Established Bayesian and Empirical Bayes procedures on false positive probability in the scenario of high dimensions multivariate normal distribution with arbitrary covariance dependence.

(With J. Berger) "Comparison of Bayesian and frequentist multiplicity correction under a scenario of data dependence". Submitted to *the Annals of Statistics*; ,poster in the 2014 ISBA international meeting.

- *Clinical trials*: Examined efficacy of HIV vaccines and invented conditional frequentist procedures in sequential clinical trials.

(With J. Berger) "Bayesian multiple testing in sequential clinical trials". In revision.

- *Ecology*: Developed a novel MCMC algorithm which runs Bayesian logistic regression efficiently and performs dimensionality reduction among 25 species and 2 million sparse observations.

(With DB. Dunson, et.al) "Sparse factor model with the application in ecology". In preparation.

Statistical and Applied Mathematical Science Institute (SAMSI), Raleigh, NC Aug, 2013
- Analyzed trends and incidence rates of sexually transmitted diseases in the US over the past thirteen years with Bayesian hierarchical model and spatial statistics.

(With A. Brouwer, et al.) "Burden of Chlamydia in the United States: Trend Analysis of Incidence Rates" Nineteenth Mathematical and Statistical Modeling Final Report, p.77-109. 2013.

AWARDS AND HONORS

Duke Reader Project, Duke University 2013 Fall
Scholarship for Studying Abroad, Ministry of Education, Taiwan 2011-2012
Dean's Award, National Taiwan University (top 10% of class) 2009-2010
SAS Statistics Fellow, SAS Institute Inc. (offered but declined) 2014 May

EXTRA-CURRICULAR ACTIVITIES

Educational outreach, Brogden Middle School, Durham, NC 2014-present
Member of *International Society for Bayesian Analysis (ISBA)* 2013-present
Statistical Science Journal Club, Duke University 2013-2014
Varsity Table Tennis Team, National Taiwan University 2006-2008