Rongrong Zhang

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OBJECTIVE   Looking for an internship opportunity in Quantitative Analyst position for summer 2017.

EDUCATION

PhD, *Statistics*, **Purdue University**, West Lafayette, IN., USA

     GPA: 3.97, Advisor: *Prof.* Michael Yu Zhu   *Expected:* **December** 2017

MS, *Mathematics,* **Peking University**, Beijing, China

     Partial differential equations, GPA:3.8, Advisor: *Prof.* Baoxiang Wang   **June** 2013

BS, *Mathematics and Statistics*, **Lanzhou University**, Lanzhou, Gansu, China

     Rank: 1 out of 156   **June** 2010

EXPERIENCE   **Statistic Consultant**   **June** 2014 — **August** 2016

- *Statistical consulting service* at Purdue University

  Proactively engaging with over **30** clients from Purdue University among various disciplines. The prompt and detailed procedures or statistic implementations are provided to clients by communicating their data and requirements through emails or face-to-face meetings. To help client achieve the goals in time, I helped them with statistical modeling, experiment designs and survey data analysis, including power calculations, repeated measure mixed effects models, linear regressions, prediction, classification using a wide variety of statistical computing programs, including R, SAS, SPSS, and Minitab.

Research Assistant   **August** 2015 — **Present**

- *Inferring Spatial Organizations of Chromosomes via Helix Models*, advised by *Prof. Michael Zhu.* Presented in Joint Statistical Meeting 2016 in Chicago.

  Working with *Prof. Michael Yu Zhu* and *Prof. Ming Hu* from NYU to understand the 3D spatial organizations of chromosomes and functional implications of such structure. We developed and applied statistical and computational methods in analyzing Hi-C data. We proposed new parsimonious, easy to interpret piecewise helical curve models for reconstructing 3D chromosomal structure from Hi-C data. Markov Chain Monte Carlo (MCMC) method is used in parameters estimation and is implemented using C++ programming.

- *Differential Gene Expression Pattern with Exon-level Count Data using Compound Symmetry Multivariate Negative Binomial Distribution*, advised by *Prof. Michael Zhu.*

  We proposed to use multivariate negative binomial distribution with certain covariance structure to model RNA-Seq exon count data, and two ikelihood ratio tests were also proposed to decide whether a gene is differentially expressed and whether there is any changes in the alternative splicing events. The expression of a gene is characterized by a distribution rather than a single value. The major difficulty in applying multivariate count distribution lie in the computational burden. Our method provides a modeling scheme for the RNA-Seq count data when counts are correlated.

- *Convolutional Neural Network Classifier for Statistical Models* , advised by *Prof. Michael Zhu.* In order to explore the ability of artificial neural networks to learn and generalize in statical modelling. We proposed a convolutional neural network classifier for statistical models and implementation in Caffe. Given a dataset, the network is able to label the statistical model the dataset is coming from and estimate the paramters in the model at the same time. Estimation accuracy depends on network complexity, the amount of training data, and the degree to which training data reflect the true distribution.

Graduate Student Instuctor at Purdue University   **January** 2016 — **Present**

- Acting as the course web-master for Introduction to Statistics class (STAT 350).

  Responsible for preparing and administering weekly quizzes,reviewing SAS, R and lab notes. holding weekly office hours, and proctoring examinations.

Research Assistant at Peking University   **August** 2011 — **June 2013**

- *Nonlinear partial differential equations, Harmonic analysis*, advised by *Prof. Baoxiang Wang*

COURSE
PROJECTS

Loan Payoff Prediction (Data Mining Course Project)
Purdue University   **March** 2016 — **May** 2016

- Decide if the bank should or should not lend money to these costumers who are asking for personal loans. Applied NBC, SVM, Logistic regression, Random Forest to determine whether these costumers can payoff their loans or not. Built and tested models via cross-validation method.

Convolutional Neural Network for Facial Attractiveness Rating
Purdue University   **Sep** 2016 — **Dec** 2016

- We proposed a deep leaning method and constructed a convolutional neural network (CNN) to predict how attractive you are from a photo, which is implemented using MXNET.

GRADUATE
COURSEWORK

- Statistical modeling:

  Generalized Linear Model
  Advanced Stat Methodology
  Nonparemetrics & Machine Learning
  Artificial intellegence

- Computing:

  Computational Statistics I, II
  Visualizing Large Complex Data
  Data Mining
  Computng For Big Data Analysis (Spark)

AWARDS

- The Founder Scholarship of Peking University, 2010-2011
- Merit Student in Peking University (1759 out of 22854, 7.70%), 2010-2011
- National Scholarship,(142 out of 19213 students in Lanzhou University, 0.74%), Ministry of Education of the People's Republic of China, 2008-2009
- First Prize of Lanzhou University Undergraduate Mathematical Contest in Modeling, 2007-2008

SKILLS

Machine Learning: parametric, non-parametric, resampling techniques (bootstrap, cross validation), classification, clustering, bagging, boosting
Programming: R, SAS, C++, SQL, Python, LaTeX, Linux, Apache Spark.
Deep Learning packages: Caffe, MXNET

PUBLICATIONS

- S. Mitsuru, B. Wang, and **R. Zhang**. Local Well-Posedness for the DaveyStewartson Equation in a Generalized Feichtinger Algebra. *Journal of Fourier Analysis and Applications*, 21.5 (2015): 1105-1129.