Yalin (Allen) Zhu

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EDUCATION

New Jersey Institute of Technology, NJ **Ph.D. Statistics**, May 2017 GPA: 3.82/4.00
Research Interests: Adaptive design, Bayesian design and multiple hypotheses testing (MHT) in clinical trials

Tianjin University of Finance and Economics, China **B.S. Statistics**, June 2012 GPA: 3.65/4.00
Track: Actuarial Science and Risk Management

CERTIFICATION

SAS Certified **Base Programmer** / **Advanced Programmer** / **Statistical Business Analyst** for SAS 9

COMPUTER/ LANGUAGE SKILLS

SAS (SDTM, ADaM), **R (shiny, devtools, MCMC), WinBUGS/OpenBUGS, Python**, Matlab**,** MySQL, Minitab, SPSS, Eviews, LaTeX

WORK EXPERIENCE

Biostatistics and Data Management, Regeneron Pharmaceuticals Inc. Basking Ridge, NJ
Ph.D. Biostatistics Internship May 2016-August 2016

- **Clinical Trial Design Research:**
  1. Developed R tools for frequentist two-stage designs.
     - Built R function to produce admissible designs (including Simon's two-stage designs as special cases).
     - Provided operating characteristic information and visualization tool for design selection.
     - Extended the binary two-stage designs to multinomial two-stage designs.
  2. Implemented Bayesian designs for Phase II clinical trial studies.
     - Explored two main kinds of Bayesian design using the Phase II trial data.
     - Built an R package for Bayesian design for single-arm study with binary endpoint, the package provided various of functions including animation to illustrate the design operations.
     - Developed a web application to examine the relationships among priors, observed data and posterior distributions (FDA recommendations) and implemented the Bayesian designs by using our R package.
- **Clinical Trial Regulatory Support:**
  1. Worked collaboratively with statistical programmers, biostatisticians, data managers, clinical team, regulatory and project management staff as a team member
  2. Reviewed and provided comments for statistical section of protocols.
  3. Developed the Statistical Analysis Plans (SAPs).
  4. Reviewed CRFs, TFLs and provided QC support.
  5. Participated in data review meeting and provided comments for improving data quality of clinical trials.

RESEARCH & TEACHING EXPERIENCE

- Proposed methodology for dealing with **complex multiple hypotheses testing** problem with **multiple families** structure. By applying the proposed procedure into clinical safety data, the proposed approach can efficiently flag the significant clinical **adverse experiences (AEs)** and reduce false discoveries without losing power. Besides flagging AE types, the proposed method provides **selective inference** as a valid analysis tool to select body systems of interest (BSoI), which affect further research of the drug development. The approach guarantees controlling **False Discovery Rate (FDR)** within the BSoI and **Generalized Family-wise Error Rate (k-FWER)** across the body systems.
- Developed several innovative procedures for **Multiple Hypotheses Testing** controlling Type I error rate (Family-wise Error Rate, False Discovery Rate) under **big data** structure. The **simulation study** and

real clinical safety data analysis results show these procedures are more powerful than classic methods when testing discrete data, some results in an increasing of 300%. We also developed a web application and R package for implementing all existing and proposed procedures.

Statistical Consulting Laboratory, NJIT Newark, NJ
Research Assistant (Project consultant) March 2013-present

- Analyzed an industrial engineering **quality control** project: Derived a better formula than ISO/DIS, which is used for wire sieves design. Using **R software** (truncated normal distribution) to get the improved maximum standard deviation according to the new formula.
- Participated in the project from New Jersey Department of Highway Traffic Safety (NJDHTS), performed highway traffic field **data collection** on seat-belt usage of New Jersey drivers and passengers. **Cleaned and manipulated data** using SQL. Used **sampling** and **regression** methods to build a **predictive model**, and generate reports.
- **Collaborated** research with Department of Civil and Environmental Engineering at NJIT: Established a **generalized linear mixed model** for resilience of felicities after Hurricane Sandy, we applied the model to **predict** future emergency conditions.

Department of Mathematical Sciences, NJIT Newark, NJ
Teaching Assistant/ Adjunct Professor February 2013-present

- Taught undergraduate statistics course (Engineering Statistics). Played roles as Tutor, Recitation Leader and MyMathLab Assistant. Graded assignments/quiz/exams. Helped student solve **Matlab**, **SAS** and **R** programming problems.

PRESENTATIONS & PUBLICATIONS

1. "FWER Controlling Procedures for Discrete Data in Clinical Safety Analysis", ASA NJ Chapter/Bayer Statistics workshop, Bayer Pharmaceuticals, November 2016.
2. "FWER Controlling Multiple Testing Procedures for Discrete Data", 12th Annual Graduate Students Research Day, NJIT, November 2016.
3. "Statistical Designs for Phase II Oncology Clinical Trials", Biostatstics and Data Management Seminar, Regeneron Pharmaceuticals, August 2016.
4. "Multiple Hypotheses Testing for Discrete Data", 13th Annual Conference on Frontiers in Applied and Computational Mathematics (FACM), NJIT, June 2016.
5. "Multivariate Logistic Type Models Based on Inverse Sampling Scheme", 13th Annual Conference on Frontiers in Applied and Computational Mathematics (FACM), NJIT, June 2016.
6. "Controlling the Overall False Discovery Rate in Testing Multiple Ordered Families of Hypotheses", Summer Research Seminar, NJIT, August 2015.
7. "Metrics and Performance Response Functions for Assessment of Resilience of Urban Infrastructure Systems", Ninth Annual Graduate Students Research Day, NJIT, October 2013.
8. Zhu, Y. and Guo, W. (2016). FWER Controlling Multiple Testing Procedures for Discrete Data. Manuscript.
9. Zhu, Y. and Dhar, S. (2016). Multivariate Logistic Type Models Based on Inverse Sampling Scheme. Manuscript.
10. Zhu, Y. and Guo, W. (2016). R package "MHTdiscrete" on CRAN.
11. Zhu, Y. and Qin, R. (2016). R package "ph2bye" on CRAN.
12. Zhu, Y. and Qin R. (2016). R package "ph2mult" on CRAN.

HONORS & AWARDS

- NSF I-Corps Student Entrepreneur Grant ($1,500) NJIT (2016)
- Graduate Student Scholarship Award (Stipend: $22,000/year) NJIT (2013-2017)
- Graduate Student Summer Research Award ($6,400/3months) NJIT (2014S, 2015S)
- GSA Annual Contribution Reward (twice) NJIT (2013-2015)
- First Prize in Academic Dissertation Workshop TUFE (2012)
- Outstanding Scholarship (top 5%) TUFE (2011)