| **[CHUANLONG (BEN) DU](http://dclong.github.com/)** | Email: [dclong@iastate.edu](mailto:dclong@iastate.edu) Phone: 515-203-1787  Blog: <http://dclong.github.com/> |
| --- | --- |

Highlights of Qualifications:

* Motivated, Diligent and hardworking person well trained in statistics/biostatistics, math and computer science.
* Demonstrated extensive experience in generalized and mixed linear models, survey sampling, clinical trial, experiment design, Bayesian analysis, etc.
* Versatile wit with exceptional computer skills including SAS, SQL, R, Java, C++, MATLAB, Linux, etc.

Education:

* PhD, Statistics, ***Iowa State University*** (ISU) Expected June 2013
* BS, Statistics, ***University of Science and Technology of China*** June 2008

Projects:

Estimation of False Discovery Rate (FDR) using Sequential Permutation P-values

* Proposed a histogram-based method for estimating FDR using sequential permutation p-values; the method does not lose much power compared to methods based on regular permutation p-values.
* Implemented the method in ***parallel*** C++ code and developed the R package “dclong.spt” wrapping the C++ code.

Salmonella Shedding Phenotypic Classes Prediction

* Examined data quality with the R package “arrayQualityMetrics”; uncovered and dropped a problematic chip.
* Invented non-statistical methods to filter genes/variables/features; alleviated the problem of large number of variables (genes) and small number of observations (samples).
* Integrated the ***lasso*** method with ***the logistic regression*** model to further select genes; identified a small list of biologically interesting genes which is under investigation using qPCR technology.

Miscellaneous Statistical Genetics Projects involving Affymetrix Genechip and RNA-seq data

* Communicated with non-statisticians, learned their problems, understood their intensions and explained statistical concepts and analysis results to them.
* Analyzed data using *generalized/mixed linear models; adapted methods and* solved problems of low expression, dependency structure, heterogeneous variance, confound factors and numerical issues.

Modeling and Inference for Equivalence Classes of 3-D Orientations

* Introduced the UARS model for equivalence classes of orientations; the model has a nice geometric interpretation.
* Proposed a Metropolis-Hastings algorithm for MCMC and implemented it in parallel MATLAB code.
* Demonstrated that the proposed Bayesian method beats standard likelihood-based approaches.

Clustering Equivalence Classes of 3-D Orientations

* Proposed a hierarchical method for clustering orientations with spatial information; the method has several “knobs” for tuning clusters.
* Originated a series of Markov chains on partitions (named ***Du Process***); proved properties of the Du process; illustrated use of the Du Process in model-based Bayesian clustering.

Teaching Experience:

* Acted as teaching assistant and lab assistant for several graduate level courses including Statistical Methods, Advanced Probability Theory, Advanced Statistical Inference and Bayesian analysis.
* Stimulated students’ interests; cultivated and enhanced their understanding in statistical concepts.
* Tutored a student during summer 2009 on probability theory; improved and expedited her study.

Selected Publications:

* T. Bancroft, ***C. Du*** and D. Nettleton (2013). Estimation of False Discovery Rate Using Sequential Permutation p-Values. Biometrics. doi: 10.1111/j.1541-0420.2012.01825.x
* E. M. Takacs, J. Li, ***C. Du***, L. Ponnala, D. Janick-Buckner, J. Yu, G. J. Muehlbauer, P. S. Schnable, M. C.P. Timmermans, Q. Sun, D. Nettleton and M. J. Scanlon. Ontogeny of the Maize Shoot Apical Meristem. *The Plant Cell Online, Am Soc Plant Biol*, 2012, 24, 3219-3234.
* ***C. Du***, S. Vardeman and D. Nordman (2013). One-Sample Bayes Inference for a New Class of Distributions on Equivalence Classes of 3-D Orientations Defined by Crystallographic Symmetries. Technometrics, tentatively accepted.
* ***C. Du*** (2012). A Series of Stationary and Ergodic Markov Chains Defined on Partitions with Applications in Bayesian Clustering. (submitted to Bayesian Analysis)
* ***C. Du*** (2013). A Method for Identifying Grains in EBSD Scans of Material Specimens Using Spatially Informed Clustering of 3-D Orientations. (working)

Extracurricular Activities:

* Organized Career Day 2012 for the Dept. of Statistics and the Dept. of Math at ISU.
* Lunched a software learning group and taught R, MATLAB and Mathematica to members.
* Revitalized the mailing list of CSSA in Ames and maintained it for 2 years.
* Initiated an “English Only” campaign among international students in the Dept. of Statistics at ISU.