

Mahbubul A. Majumder

Assistant Professor • Department of Mathematics
238 DSC • University of Nebraska at Omaha • Omaha, NE 68182
(402) 554-2734 • mmajumder@unomaha.edu

Education

- **PhD. in Statistics, Iowa State University** **Ames, IA**
Department of Statistics 2007 – 2013
 - **MA. in Statistics, Ball State University** **Muncie, IN**
Department of Mathematical Sciences 2005 – 2007
 - **BSc. (Honors) and MSc. in Statistics, University of Dhaka** **Dhaka, Bangladesh**
Department of Statistics 1992 – 1998
-

Publication

- Puniya, B., Allen, L., Hochfelder, C., Majumder, M., Helikar, T. (2016) "Systems Perturbation Analysis of a Large Scale Signal Transduction Model Reveals Potentially Influential Candidates for Cancer Therapeutics", *Frontiers in Bioengineering and Biotechnology, section Bioinformatics and Computational Biology*. Vol. 4, pp 10. doi: 10.3389/fbioe.2016.00010
- Cook, D., Lee, E. and Majumder, M. (2016) "Data Visualization and Statistical Graphics in Big Data Analysis", *Annual Review of Statistics and Its Application* 3:133-59
- Pandey, P., Pasternack, G., Majumder, M., Soupir, M., Kaiser, M. (2015) "A neighborhood statistics model for predicting stream pathogen indicator levels". *Environmental Monitoring and Assessment*. Vol. 187(3), pp 124.
- Roy-Chowdhury, N., Cook, D., Hofmann, H., Majumder, M., Lee, E., Toth, A. (2014) "Using Visual Statistical Inference to Better Understand Random Class Separations in High Dimension, Low Sample Size Data", *Computational Statistics*, ISSN 0943-4062 pp 1-24. doi: 10.1007/s00180-014-0534-x.
- Majumder, M., Hofmann, H., Cook, D. (2013), "Validation of Visual Statistical Inference, Applied to Linear Models", *Journal of The American Statistical Association*, Vol. 108(503) pp 942-956.
- Atwood, S. E., O'Rourke, J. A., Peier, G. A., Yin, T., Majumder, M., Zhang, C., Cianzio, S., Hill, J. H., Cook, D., Whitham, S. A., Shoemaker, R. C. and Graham, M. A. (2013), "Replication protein A subunit 3 and the iron efficiency response in soybean", *Plant Cell and Environment*, Vol. 37(1), pp 213-234.
- Yin, T., Majumder, M., Roy Chowdhury, N., Cook, D., Shoemaker, R. and Graham, M. (2013), "Visual Mining Methods for RNA-Seq Data: Data Structure, Dispersion Estimation and Significance Testing", *Journal of Data Mining in Genomics & Proteomics*, Vol. 4(4):139. doi: 10.4172/2153-0602.1000139.
- Zhao, Y., Cook, D., Hofmann, H., Majumder, M., and Roy-Chowdhury, N. (2013), "Mind Reading: Using an Eye-Tracker to See How People are Looking at Lineups", *International Journal of Intelligent Technologies and Applied Statistics*, Vol. 6(4) pp 393-413.
- Hofmann H., Follet L., Majumder M., Cook D. (2012), "Graphical Tests for Power Comparison of Competing Designs", *IEEE Transactions on Visualization and Computer Graphics*, Vol. 18(12), pp 2441-2448.
- Roy-Chowdhury N., Cook D., Hofmann H., and M. Majumder (2011), "Visual Statistical Inference for Large p , Small n Data", in *JSM Proceedings, Section of Statistical Graphics*. Alexandria, VA: American Statistical Association, pp 4436-4446.
- Majumder, M., Ali M. M. (2008), "A Comparison of Methods of Estimation of Parameters of Tukey's gh Family of Distributions", *Pakistan J. Statistics*, Vol. 24(2) pp 135-144.
- Jay, B. and Heinz, A., Majumder, M. (2007), "An Algorithm for Graceful Labeling of Cycle", *Congressus Numerantium* 186 (2007) pp. 57-63.
- Jay, B. and Heinz, A., Majumder, M. (2007), "Properties of graceful Labeling of Cycle", *Congressus Numerantium* 188 (2007) pp. 109-115.
- Majumder, M., Haque, A., Kaykobad, M. (2000), "Graceful Labelling of Complete Binary Trees", *Proceedings of International Conference on Computer and Information Technology, ICCIT 2000*.

Manuscripts submitted

- Roy-Chowdhury N., Cook D., Hofmann H., Majumder M., Zhao Y. (2016) "Utilizing Distance Metrics on Lineups to Examine What People Read From Data Plots", *Journal of Computational and Graphical Statistics*, under revision.
- Frederick, K., Haverland, N., Majumder, M., Ciborowski, P. (2016). "SWATH-MS data processing: Towards reduction of variability", *Journal of Proteome Research*. under second review.

Manuscripts in preparation

- Majumder, M., Hofmann, H., Cook, D. (2016), "Impact of Demographics and Skills of the Observer on Visual Statistical Inference", *Intended Journal: Sociological Methodology*.
- Majumder, M., Konvalina, J. (2016), "Use of Phase Plot to Predict the overall Health Status", *Journal of Computational and Graphical Statistics*.
- Ahmed Z. Afify, Majumder, M., Haitham M. Yousof, M. Masoom Ali (2016), "The Weibull Generalized-G Family of Distributions: Properties and Applications", *Statistical Science*.

Grant

- 2016, Analysis of Visiting Nurse Association's (VNA) Experimental Data to Identify Effectiveness of Service Improvement after Using Tine Tag Product. Provider: Nebraska Applied Research Institute (NARI) \$11,601

Advising

- Messan Amber (MS): Effect of UK Brexit on Financial Market Graduation - 2017
- Pathy Sekelelo Nsimpati (MS): Poverty situation of children under age six at Nebraska. 2017
- Nan Dong (MS): Use of phase plot to predict customer behavior at TDAmeritrade 2016
- Venkata Sessa Raghava Gorajala (MS): Analysis of mailing patterns of promotions. 2016
- Joshua Wittenbach (MS): Exploring the Sources of Revenue for Haygood Musical Shows 2016
- Roland Signon (MS): V-curve Analysis and Recommendations 2016
- Davina Faimon (MS): Multi-Dimensional Pricing Model for Haygood Family Entertainment, Inc. 2016
- Jace Crist (MS): Comprehensive Examination of Intermodal Customer Spending Patterns 2015
- Anthony Armstrong (MS): Visualizing Nuclear Safety Culture Survey Results 2015

Teaching

- 2016 Fall, UNO, Stat4410 : Introduction to Data Science Avg. evaluation (questions:1-29)
- 2016 Summer, UNO, Stat3000 : Statistical Methods 4.5/5
- 2016 Spring, UNO, Stat4420 : Exploratory Data Visualization 4.2/5
- 2016 Spring, UNO, Stat3000 : Statistical Methods 4.3/5
- 2015 Fall, UNO, Stat4410 : Introduction to Data Science 4.5/5
- 2015 Fall, UNO, Stat3000 : Statistical Methods 4.2/5
- 2015 Summer, UNO, Stat3000 : Statistical Methods 4.0/5
- 2015 Spring, UNO, Stat4420 : Exploratory Data Visualization 4.3/5
- 2015 Spring, UNO, Stat3000 : Statistical Methods 3.9/5
- 2014 Fall, UNO, Stat4410 : Introduction to Data Science 4.8/5
- 2014 Fall, UNO, Stat3000 : Statistical Methods 4.6/5
- 2014 Summer, UNO, Stat3000 : Statistical Methods 4.2/5
- 2014 Spring, UNO, Stat3800 : Engineering Statistics 4.3/5
- 2014 Spring, UNO, Stat3000 : Statistical Methods 4.1/5
- 2013 Fall, UNO, Stat3800 : Engineering Statistics 4.3/5
- 2013 Fall, UNO, Stat3000 : Statistical Methods 4.1/5
- 2012 Fall, Iowa State University, stat 305 : Engineering Statistics 4.1/5
- 2012 Spring, Iowa State University, stat 226 : Introduction to Business Statistics 3.7/5
- 2011 Spring, Iowa State University, Lab TA, stat 326 : Introduction to Business Statistics 4.2/5
- 2011 Spring, Iowa State University, Lab TA, stat 401B : Introduction to Business Statistics 3.9/5
- 2009 Spring, Iowa State University, Lab TA, stat 101 : Introduction to Statistics 3.9/5
- 2009 Fall, Iowa State University, Lab TA, stat 101 : Introduction to Statistics 4.1/5

Awards

- 2012, Vince Sposito award for outstanding potential in stat. computing. Dept. of Statistics, Iowa State Univ.
 - 2011, Best Poster Award, The 4th Annual Midwest Stat. Research Colloquium, Univ. of Wisconsin, Madison
 - 2010, Student paper award - ASA Computing and Graphics Sections
 - 2010, First prize , graphical analysis of recovery data, Design for America contest. (team, Iowa State Univ.)
 - 2007, Dean's Citation for Academic Excellence, Ball State University
-

Presentations

- 2016, "Use of Phase Plots to explore financial data", JSM, Chicago, IL
 - 2015, "Direct Use of Statistical Graphics in Statistical Decision Making Process", UNL , Lincoln, NE
 - 2015, "Investigation Into Phase Plots To Be Used As Overall Health Status Indicator", JSM , Seattle, WA
 - 2015, "Making A Reproducible Data Analysis Report", AIM Infotech, Omaha, NE
 - 2014, "Human Factors Affecting Visual Statistical Inference", JSM , Boston, MA
 - 2013, "Validation of Visual Statistical Inference, Applied to Linear Models", Biomechanics Lab, UNO, NE
 - 2012, "Power of Visual Statistical Inference in a Non-Normal Scenario", JSM , San-Diego, CA
 - 2012, "Turk Experiments for Visual Inference", Interface, Rice University, TX
 - 2011, "Visual Statistical Inference for Regression Parameters", JSM, FL
 - 2011, "Visual Inference for Regression Parameters", Interface, SAS campus, NC
 - 2010, Dhaka University Statistics Department Alumni Association conference, Dhaka, Bangladesh
 - 2007, 38th Southeastern International Conference on Combinatorics, Graph Theory, Boca Ratan, FL
 - 2006, "On graceful labeling of cycles" in 43rd Midwest Graph Theory Conference (MIGHTY) at IUPUI, IN
 - 2006, "Data Mining" in Mathematical Association of America (INMAA) conference at Taylor University, IN
 - 2000, "Graceful Labelling of Complete Binary Trees", International Conference on Computer and Information Technology, Dhaka, Bangladesh
-

Experience

- **University of Nebraska at Omaha.** **Omaha, NE**
Assistant Professor *2013 – present*
 - Develop Data Science program in collaboration with business and IS&T colleges
 - Design and teach new data science courses such as Introduction to Data Science and Data Visualization
 - Consult and advise to help data science initiative at Nebraska Applied Research Institute (NARI)
 - Develop infrastructure to handle massive data.
 - Research on big data visualization.
 - Collaborate with other researchers in data analysis and visualization.
 - Teach graduate and undergraduate statistics courses.
 - Advise graduate and undergraduate students
 - Provide various services through different committees around the campus
- **Iowa State University.** **Ames, IA**
Graduate Assistant *2007 – 2013*
 - Develop visual statistical inference procedure based on statistical graphics using R.
 - Conduct survey on human perception about statistical plots.
 - Develop web application to obtain feedback data on visual inference using HTML, MySQL and PHP
 - Research for Hy-vee, analyzed mixture models for sales data using R and SQL.
 - Consultant, analysis of continuous/categorical/repeated measured data using SAS and R.
 - Teaching assistant for business statistics and introductory statistics courses.
 - Generate visualization of large Gene sequence data (Soybean genome), Department of Agronomy
- **Novartis Pharmaceuticals Corporation** **East Hanover, NJ**
Modelling and Simulation group, Summer Intern *5/2011 - 8/2011*
 - Data mining on large database, General Electric - Electronic Medical Record (GE-EMR) using R, SQL
 - Develop and validate heart failure and cardiovascular risk engines.
 - Generate exploratory report, visualization of the data and develop statistical models for the analysis and assessment of data collected over multiple cardiovascular studies.
- **Hy-Vee, Inc.** **Des Moines, IA**
Statistical Consultant, Summer Intern *6/2010 - 8/2010*
 - Analyzed time series models for sales data to understand the sales pattern over time.
 - Implemented generalized linear models (GLM) to predict sales and forecast demand for hot-deal item.
 - Produced Nutritional Value (NuVal) reports based on categorical grocery data analysis using R, SQL.
- **Ball State University.** **Muncie, IN**
Graduate Assistant *2005 – 2007*

- Research for St. Paul Travelers to predict severity of accidents.
- Analyzed generalized linear model (GLM) for St. Paul Travelers using SAS macro/SQL.
- Developed methods to estimate parameters of Turkey's gh distribution using Mathematica.
- Teaching Assistant and LAB TA for various courses.

- **Sonali Bank and The Premier Bank Limited.**

Dhaka, Bangladesh

Senior and Executive Officer (Head, Information Technology)

1998 – 2005

- Managed IT division of 10 full-time employees to support 13 divisions and 21 branches.
- Provided IT solutions such as online banking, credit cards, intranet & email.
- Allocated resources and tasking and organized training for improvement of IT manpower.
- Experienced in C++, VB6, SQL, MS Access, MySQL, PHP, HTML, Apache & Excel.
- Designed and developed corporate web site and application software for HR.
- Supervised 15 new branch opening issues.
- Performed statistical analysis with transactional data and modeled credit risk.

Core Technical Skills

Languages: R, SAS macro, JavaScript, D3, PHP, HTML, MySQL

Big data tools: Hadoop, Pig, Hive, Impala

Statistics: Visual Statistical Inference, Exploratory data analysis and statistical modeling, Visualizing large data, data mining

Analysis data: Reshaping raw data for statistical analysis, exploring missing data, assessing data quality, extracting data from various sources such as web or data bases.

Open Source Contributions: R package Nullabor