

Lawrence S. D. Mosley

PRACTICE AREAS Statistical Modeling, Statistical Graphics, Data Mining, Operations Research

EDUCATION

Iowa State University, Ames, IA USA

Ph.D., Industrial Engineering, December 2013

- Dissertation Title: *A Balanced Approach to the Multi-Class Imbalance Problem*
- Adviser: Professor Sigurdur Ólafsson
- Impact: 19 citations, 5250+ downloads, 1 patent citation, academic h-index of 2
- Area of Study: Data Mining, Supervised Learning, Ensemble Methodology, and Mathematical Programming

Iowa State University, Ames, IA USA

M.S., Statistics, May 2009

- Creative Component Topic: *Exploring Number One Hits*
- Adviser: Professor Dianne Cook
- Area of Study: Exploratory Data Analysis, Applied Data Mining and Survival Analysis

Southern University, Baton Rouge, LA USA

B.S., Electrical Engineering, May 2006

- *Cum Laude*, With Honors in Engineering
- Undeclared Minor in Economics (Macroeconomics and Finance)

TEACHING EXPERIENCE

Iowa State University, Ames, Iowa USA

IMSE 590 Visiting Instructor **January 2019 to May 2019**

Analytics Projects for Improved Decision Making in the Service Sector

- Prepared and gave lectures.
- Guided students by assisting with concept explanations and project structuring.
- Attended weekly progress meetings and held online office hours.

IMSE 148 Teaching Assistant **August 2012 to December 2012**

Information Engineering

- Held office hours where I instructed freshmen industrial engineering students on proper VBA, SQL, and VBA.Net coding techniques.
- Graded weekly homework assignments.

STAT 480 Grader **January 2012 to May 2012**

Applied Statistical Computing

- Graded weekly homework assignments where students were scored on their ability to conceptualize a data analysis and implement it in R and/or Excel.

STAT 407 Lab Instructor **August 2011 to December 2011**

Methods of Multivariate Analysis

- Lead weekly lab sessions involving the utilization of R to perform multivariate statistical analysis on constructed case studies from a variety of disciplines.

- Graded lab assignments and homeworks.
- Held office hours as a supplement to classroom and lab instruction.

STAT 503 Grader **January 2011 to May 2011**

Exploratory Methods and Data Mining

- Graded homeworks and projects where students were tasked with the development of a graduate level conceptualization of a data analysis problem and the application of an appropriate data mining technique as implemented in the R programming language.

STAT 451 Grader **January 2010 to May 2010**

Applied Time Series

- Graded weekly homework assignments that verified the student's ability to perform basic time series analysis.

STAT 326 Lab Instructor **January 2010 to May 2010**

Introduction to Business Statistics II

- Lead weekly lab sessions involving the utilization of JMP to perform statistical analysis on carefully constructed business case studies.
- Graded lab assignments and homeworks.
- Held office hours as a supplement to classroom and lab instruction.

STAT 551 Teaching Assistant **August 2009 to December 2009**

Time Series Analysis

- Assisted the instructor by grading papers and writing solutions for take home assignments.
- Held office hours as a supplement to classroom and lab instruction.

STAT 326 Lab Instructor **August 2009 to December 2009**

Introduction to Business Statistics II

- Lead weekly lab sessions involving the utilization of JMP to perform statistical analysis on carefully constructed business case studies.
- Graded lab assignments and homeworks.
- Held office hours as a supplement to classroom and lab instruction.

STAT 451 Grader **January 2009 to May 2009**

Applied Time Series

- Graded weekly homework assignments that verified the student's ability to perform basic time series analysis.

STAT 503 Grader **January 2009 to May 2009**

Exploratory Methods and Data Mining

- Graded homeworks and projects where students were tasked with the development of a graduate level conceptualization of a data analysis problem and the application of an appropriate data mining technique as implemented in the R programming language.

STAT 528 Lab Instructor **August 2008 to December 2008**

Applied Business Statistics for MBA Students

- Co-lead weekly lab sessions involving case studies of statistical decision making in business settings.
- Assisted the instructor by grading papers and writing solutions for take home assignments.
- Held office hours as a supplement to classroom and lab instruction.

STAT 430 Teaching Assistant

August 2008 to December 2008

Empirical Methods for Computer Science

- Assisted the instructor by grading papers and writing solutions for take home assignments.
- Held office hours as a supplement to classroom and lab instruction.

STAT 101 Lab Instructor

August 2006 to May 2008

Principles of Statistics

- Lead weekly lab sessions involving simple statistical analysis of carefully designed classroom experiments.
- Graded lab assignments and homeworks.
- Held office hours as a supplement to classroom and lab instruction.

CONSULTING EXPERIENCE

Omni Analytics Group

Founder CEO and Executive Data Scientist

October 2013 (Ongoing)

- As the executive data scientist and founder of Omni Analytics Group, over 100 clients have utilized my expertise in data mining, statistics, and visualization to form data strategies, design algorithms, perform analysis and train themselves on how to make objective data driven decisions. Through those four core services, I help clients plan and execute data initiatives that improve their bottom line by providing insights into customers segments and business inefficiencies.

DataCamp

Project Instructor

December 2018 (Ongoing)

- Instructor of the data science project on unsupervised methods, “[Clustering Bustabit Gambling Behavior](#)”
- Engendered the topic, designed the project curriculum and oversaw the creation of the finalized product.

Numerai

Modeler and Developer

January 2017 (Ongoing)

- Developed statistical models to forecast profitable financial trades that achieved top 10 results during two independent weekly competitions.
- Designed the [NumerDash](#) application that visualizes Numerai tournament performance.
- Oversaw the development of the Rnumerai package that provides an R interface to the Numerai machine learning tournament API. This package has been published on [CRAN](#).
- Was cited in an article on October 4th, 2018 by [Bloomberg](#) for contributions to the Numerai and Erasure platforms.

Anthem Inc.

Contract Data Scientist

December 2015

- Performed advanced analytics using Natural Language Processing (NLP) techniques to synthesize 20,000 employee engagement free form text responses into 20 actionable topics that contained sources of employee dissatisfaction that were previously unknown to upper management.

EFL Global

Contract Data Scientist

March 2014 - June 2016

- Participated as both assistant and lead within multiple credit scoring model development exercises leveraging logistic regression, least absolute shrinkage and selection operator (LASSO), random forests, and gradient boosted machines techniques to quantify default risk in EFLs regional and partner data pools.
- Developed highly optimized R packages to perform specialty ancillary modeling tasks such as: feature engineering, variable transformations, assessing effect stability, ranking variable efficacy, and visualizing variable influence.
- Developed a clustering procedure and application that enabled the grouping of partners into global segments with measurable similarity.
- Performed on-site training in Lima, Peru to assist with R capabilities and helped facilitate the company wide transition from Stata.

Dupont

Contract Statistician

November 2014 - March 2015

- Designed, implemented and deployed an online consumer Discrete Choice Experiment for Duponts global nutrition and health clients.
- Results from this study were analyzed and used as data inputs to form their global market segmentation model in charge of categorizing customers representing over \$300 million in annual revenue.

ManageUp! (now known as Good.co)

Statistician

June 2012 - March 2013

- ManageUp! is an internet start-up company based in Silicon Valley that seeks to match job seekers with employers based on their cultural and personality fit. Under my lead, their on-board industrial psychologist constructed the survey and initialized the Bayesian-esque priors while I developed and coded the archetype matching algorithm. The end result was a scalable recommender system which, after achieving over 75% accuracy in live alpha testing, was later deployed and has now matched over 30,000 beta users.

Global Emissions Inc.

Contract Statistician

June 2012

- Global Emissions is a start-up company based in Texas that models pollution levels emitted from power plant stacks. As a contract statistician, I was responsible for the development of the NOx and O2 predictive models.

Elance (now known as Upwork)

Freelance Statistician

December 2012 - December 2013

- I aided companies in understanding their data through the use of various statistical techniques while also providing live session private mentoring in business analytics.

Freelancer.com

Freelance Statistician

December 2011 - December 2013

- I used web conferencing software to assist private professionals and graduate students by providing: recorded data analysis and lectures for graduate students working on their thesis and dissertations.
- Completed a wide arrange of statistical analysis in the fields of reliability, bio-statistics, etc.

Allstate Insurance Company

Contract Statistician

September 2011

- Under contract, I preformed statistical and exploratory analysis on confidential company data.

GRADUATE AND RESEARCH ASSISTANTSHIPS

Iowa State University, Ames, Iowa USA

ISU Graduate College

January 2012 - August 2013

- Performing ad hoc statistical analysis on survey data for various topics such as graduate activity, student life, and post-doc recruitment.
- Small scale database design to streamline data extraction.
- Data querying and manipulation for reporting and publication.

ISU School of Veterinary Medicine

July 2010 - December 2010

- Quantify the risk of pig farm exposure to the P.R.R.S. virus through the application of classification and clustering techniques.
- Performed ad hoc statistical analysis as needed.

PUBLICATIONS

Hofmann, H., Cook, D., Kielion, C., Schloerke, B., Hobbs, J., Loy, A., Mosley, L., Rockoff, D., Huang, Y., Wrolstad, D., Yin, T. “Delayed, Canceled, on Time, Boarding Flying in the USA”. *Journal of Computational and Graphical Statistics*. Vol. 20, Iss. 2, 2011

Mosley, L., Cook, D., Hofmann, H., Kielion, C., and Schloerke, B. “Monitoring the 2008 Election”. *CHANCE Magazine*. 2010.

WORKING PAPERS

Mosley, L., Pham, H., Bansal, Y., “Towards a Systematic Understanding of Blockchain Governance in Proposal Voting: A Dash Case Study”. 2019.

Mosley, L., Pham, H., Bansal, Y., Hare, E., “Sorghum Head Image Analysis When You Only Want to Look Once.” In Proceedings Second International Workshop on Machine Learning for Cyber-Agricultural Systems. 2019.

CONFERENCE PRESENTATIONS

“What Makes a Number One Hit? A Statistical Exploration of Popular American Music”. *4th Annual GMAP Research Symposium*, June 16, 2010.

CONFERENCE TRAINING SESSIONS

“Interactive Web Applications with Shiny”. *Melbourne Data Science Week 2017 (Medasci2017)*, May 31, 2017.

SEMINARS AND
TALKS

- “Data Science for Start-Ups”. *I.S.U. CyStarters Workshop*, June 26, 2019.
- “IMSE Graduate Alumni Academic Involvement and Outreach ”. *I.S.U. Industrial Engineering Industry Advisory Council*, April 25, 2019.
- “A Balanced Approach to the Multi-Class Imbalance Problem”. *I.S.U. Statistical Graphics Working Group*, November 9, 2012.
- “Why the Pig Farm P(u)RRS: A Statistical Look into the Transmission of the Porcine Reproductive and Respiratory Syndrome”. *I.S.U. Statistical Graphics Working Group*, April 29, 2011.

AWARDS, GRANTS
AND
SCHOLARSHIPS

- Second International Workshop on Machine Learning for Cyber-Agricultural Systems
- First place in the MLCAS 2019 Sorghum Head Detection Challenge (with Yogesh Bansal, Hieu Pham and Eric Hare), \$1,500, 2019

RStudio

- RStudio 1st Shiny Contest Honorable Mention Winner for our OCR based hand-writing game developed in Shiny (with Yogesh Bansal and Eric Hare), 2019

Lykke Research Hub

- Lykke Research Hub 2nd Place Grant Winner for Analyzing the Dash Proposal System (with Eric Hare), \$2,500, 2018

Sunlight Foundation

- Design For America Grand Prize Winner for visualizing data from the American Reinvestment and Recovery Act (with Tengfei Yin, Marie Vendettuoli, David Rockoff, Mahbub Majumder, Xiaoyue Cheng, Xiang Wu, Justin Funk, Heike Hofmann, Dianne Cook), \$10,000, 2010

American Statistical Association Statistical Graphics and Statistical Computing

- ASA Data Expo '09 2nd Place Winner for visualizing data from commercial flights within the USA from October 1987 to April 2008 (with Heike Hofmann, Dianne Cook, Chris Kielion, Barret Schloerke, Jon Hobbs, Adam Loy, David Rockoff, Yuanyuan Sun, Danielle Wrolstad and Tengfei Yin), \$500, 2009

Iowa State University

- Alliances for Graduate Education and the Professoriate Fellowship, 2008-2012
- Graduate Minority Assistantship Program Scholarship, 2006-2008

American Economic Association

- AEA Summer Training Program Scholarship, 2004 & 2006

Southern University and A&M College

- HBCU-UP Strengthening Minority Access to Research and Training Scholarship, 2002-2006
- SUBR Timbuktu Academy Scholarship, 2002-2006
- SUBR Honor's College Scholarship, 2002-2006

COMPUTATIONAL
EXPERTISE

Statistical and General Programming: R, JMP, SAS Enterprise Guide

Computer Applications: T_EX (L^AT_EX, B_IB_TE_X), Microsoft Access, Microsoft Project, Microsoft Visio

STATISTICS AND
MODELING
EXPERTISE Data Mining, Survival Analysis, Reliability, Multivariate Analysis, Exploratory Data Analysis, Statistical Graphics, Mathematical Optimization

APPLICATION
INTERESTS Business Analytics, Business Model Generation, Operations Research, Econometrics

REFERENCES Available upon request