

# HILDA S. IBRIGA

Address: 3378 Peppermill Dr, Apt 1A, West Lafayette, IN, 47906

• Phone:(917) 330-4180 • Email: Hibriga@purdue.edu • Webpage: <https://hilda-ibriga.me>

---

**Objective:** I am a Ph.D. student in Statistics with four years of research experience centered around developing machine learning models and tensor data analysis. I also have three years of statistical consulting work experience. Find my complete research, work, projects and leadership profile on my personal website.

## SKILLS

---

- **Statistics:** Statistics Consulting, Design of Experiments, GLM, Mixed Effect Models, Machine Learning models, Tensor data analysis, Bayesian analysis, MCMC methods.
- **Programming:** experienced in R, Python, SAS, MATLAB, SQL, C++.
- **Language:** English, French(native fluency)

## EDUCATION

---

- Purdue University, Department of Statistics**, West Lafayette, IN Expected 08/2021
- Ph.D. candidate in Statistics
  - Research Areas: Tensor-Variate Analysis, Machine Learning, Non-Convex Optimization
  - Advisors: Dr. Wei Sun, and Dr. Bruce Craig
- University of Arkansas, Department of Mathematics**, Fayetteville, AR 05/2014
- M.S. in Mathematics GPA : 3.94/4.00
  - Recipient of Lawrence Jesser Toll Award (2014)
- Westminster College, Department of Mathematics**, Fulton, MO 05/2011
- B.A. in Mathematics and Economics (Double major) GPA: 4.00/4.00
  - Graduated *With Highest Distinction*

## WORK EXPERIENCES

---

- The Data Mine Purdue**, West Lafayette, IN: **Head Teaching Assistant** 08/2019 - present
- Supervised a group of 12 TAs and organized and ran TA training meetings.
  - Contributed in co-writing and reviewing all R, Python and SQL course projects.
  - Held office hours and led projects grading meetings.
  - Contributor and editor of the DataMine example book.
- ASANA**, San Francisco, CA: **Data Science Intern** 05/2018 - 08/2018
- Conducted comparative research on two competing model agnostic machine learning interpretability methods Lime and Anchor.
  - Integrated Lime into the existing machine learning model for predicting account churn which allowed to:
    - Identify features which explain high churning probability for a given account
    - facilitate understanding and actionability for the business team
  - Co-wrote documentation for the implementation and integration of Lime into the account churning model
- Purdue Consulting Services**, West Lafayette, IN: **Statistics Consultant** 08/2015 - 12/2018
- Worked on 50+ consulting projects in Engineering, Social Sciences and Natural Sciences fields.
  - Assisted clients at each of the fundamental statistical modeling steps:
    - Defining scope of project, design of experiment,
    - Data quality control, data analysis and visualization using R, SAS, MATLAB or SQL
    - Results interpretation and writing for journal publication, technical report and grant proposal.
  - Projects include social network analysis, sample size calculation for complex experimental designs, analysis of large time series data, metrics engineering.
  - Co-authored the free manual titled “Introduction to the Statistical Software R”, to provide a quick introduction to R for the use of faculty and students at Purdue University.

**Advertisement Clustering via Coupled Tensor Completions with Side Information**

- Developed an algorithm (COSTCO) which performs joint spectral decomposition for high dimensional data array and a matrix coupled along one mode using alternating minimization method.
- Showed that method is robust to high percentage of missing data, sparsity and noise level in data through extensive simulation and application on online advertisement data.
- Demonstrated that method can be combined to clustering algorithm to reveal new and interesting ad clusters key for to plan better ad strategies.
- Currently building R package for COSTCO.

**Engineering Metrics for Engineers Teamwork Ratings Quality Assessment**

- Led a group of three engineers to developed metrics and statistical methods for accessing the quality of ratings data generated by the CATME system.
- Built prototype tools for automating data cleaning and analysis in R and SAS.
- Created instruction manuals and Run live demo of new tools to help CATME system users run analyses independently.
- New tools are to be integrated into the CATME system which is currently deployed to more than 1 million users from 80 countries.

**Locating and Quantifying the Effect of QTL using EM Algorithm and Bayesian Lasso Method**

- Implemented an EM algorithm in R which sequentially locates and estimates the magnitude of the effects of 176 markers on blood pressure in mice.
- Performed a permutation test to compute the critical value for the test statistics.
- Used a hierarchical model approach with a non-informative prior on the tuning parameter to implement Bayesian Lasso in R which allowed for simultaneously testing the location and effect of all markers at once.
- Used a Gibb sampler to sample from the full conditional posterior of 341 parameters and hyper-parameters.

**Disease Status Prediction and Growth Trend of Aortic Aneurysms**

- Used high frequency ultrasound aneurysm data to develop prediction models of both aneurysm formation and growth trend.
- Used a quadratic discriminant analysis and logistic regression to build two statistical models to predict disease status.
- Validated model performance through leave one out cross validation prediction accuracy, ROC curve, specificity and sensitivity analysis.

RESEARCH AND PUBLICATIONS

---

1. Hilda S Ibriga, Will Wei Sun, and Bruce Craig. Inference and uncertainty quantification for covariate-assisted sparse tensor completion. *Manuscript*, 2021
2. Hilda S Ibriga and Will Wei Sun. Covariate-assisted sparse tensor completion and applications to advertisement clustering. *Submitted*, 2021 arXiv: 2103.06428
3. Rebecca Rivera, McKenna Deckard, Dennis Savaiano, Krystal Lynch, Melissa Maulding, Hilda Ibriga, and Heather Eicher-Miller. Reliability of the indiana supplemental nutrition assistance program-education (snap-ed) program evaluation survey (p04-074-19). *Current Developments in Nutrition*, 3, 2019
4. Zachary A. Weber, Palakpreet Kaur, Amrita Hundal, Hilda. Ibriga, and Ashay D. Bhatwadekar. Effect of the pharmacist-managed cardiovascular risk reduction services on diabetic retinopathy outcome measures. *Pharmacy Practice*, 17, 2019
5. D. M. Ferguson, M. W. Ohland, C. Lally, H. Ibriga, and Y. Cao. Evaluating the effect of different teamwork training interventions on the quality of peer evaluations. In *2018 IEEE Frontiers in Education Conference (FIE)*, pages 1–5, 2018
6. Amelia R. Adelsperger, Evan H. Phillips, Hilda S. Ibriga, Bruce A. Craig, Linden A. Green, Michael P. Murphy, and Craig J. Goergen. Development and growth trends in angiotensin ii-induced murine dissecting abdominal aortic aneurysms. *Physiological Reports*, 6, 2018
7. Daniel M. Ferguson, Chad Lally, Hilda Ibriga, Olivia Murch, and Matthew W. Ohland. Using frame-of-reference training to improve the dispersion of peer ratings in teams. volume 2016-November, 2016

## AWARDS

---

- 2020 - Recipient Purdue University Graduate School Ross Fellowship.
- 2014 - Winner of the University of Arkansas Lawrence Jesser Toll Award for academic excellence.
- 2012 - Recipient of the John C Massie Scholarship
- 2011 - Winner of Westminster College Academic Dean of Student Research and Presentation Award for Math thesis research.
- 2010- Inducted into Pi Mu Epsilon Mathematics Honor Society.
- 2007 - Awarded the Davis United World College scholarship.

## LEADERSHIP

---

### **Statistics in the Community (STATCOM), Purdue University, - Associate Director** 08/2016 - 05/2018

- Coordinated projects and supervised teams of graduate and undergraduate students working on pro-bono statistics consulting projects for non-profit organizations.
- Worked with West Lafayette City Council leaders on how to evaluate city development strategy using a data driven approach.
- Delivered project report presentations on-site to organizations.
- Helped run the Statistics booth during Purdue Spring Fest, sharing the joys of statistics by demonstrating simple statistics to children.

### **Arkansas Women in Mathematics, - Treasurer** 08/2012 - 05/2013

- Helped organize club annual invited speaker event.
- Organized club's budget and bookkeeping.
- Gave talks and presentation on majoring in Mathematics to local high schools.

### **Pi Mu Alpha Mathematics Honor Society, Westminster College, - President** 01/2009 - 01/2010

- Planned and organized activities for the undergraduate math club.
- Gave talks and tours during mathematics prospective student visits.
- Selected as mentor for the class 2014 freshmen mathematics seminar.