Brayan V. Ortiz

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Education:

University of Washington, Seattle, WA
- Ph.D., Biostatistics, Standard Pathway, 2018

California State University Fullerton, Fullerton, CA
- B.A. Mathematics, (Probability and Statistics Concentration), 2013

Professional and Research Experience:

Amazon, Modeling and Optimization within Supply Chain Optimization Technologies, Seattle, WA
Modeling & Optimization, July 2018 - present, Senior Applied Scientist
- Statistical modeling and research on operations topics like network design and labor planning
- Build production pipelines for operational inputs using AWS products
- Prototype and productionize next-generation solutions, such as graph and reinforcement learning applications in operations
- Integrating optimization-based insight into short and long term planning of transportation network
- Instructor and generator of instructional material for internal planning tools
- Experimental design for piloting new processes
- Professional mentorship of data scientists and data engineers
- Software: `Python (Scikit, Numpy, Pandas, PyTorch, TensorFlow)`, `FICO Xpress`, `SQL`, `R`

Centro de Investigaciones de Cancer en Sonora (Sonora Cancer Research Center), Seattle, WA
Adjunct Professor of Biostatistics, Biostatistics, 2018 - 2019
- Clinical trial design, statistical analyses, and manuscript preparation.

University of Washington, Department of Biostatistics, Seattle, WA
Research Assistant, Tim Thornton under NIH Statistical Genetics Training Grant, 2013-2014
- Ran principal component analyses to detect population structure such as admixture in genome wide association studies
- Software: `R` Statistical Software

Research Assistant, Noah Simon, 2014-2015, 2017-2018
- Develop nonparametric penalized regression methodology, which included describing/proving theoretical properties and creating alternating direction method of multipliers solver
- Software: `Python` (`CVXPY, CVXOPT, SciPy, NumPy`), `C++` (`Armadillo), R (Rcpp, RcppArmadillo)`

Research Assistant, Jim Hughes, 2015-present
- Develop Bayesian methodology incorporating information from multiple sources to predict pill-taking adherence in HIV prophylaxis clinical trials
- Software: `R, OpenBUGS, JAGS, STAN`

Teaching Assistant, Biostatistics 310 with Lyndia Brumback, 2017
- Provided supplemental lectures on topics such as data description, study design, screening, estimation hypothesis testing, categorical data analysis, and regression.
- Job duties included lecturing, grading, and preparing lecture slides.

Teaching Assistant, Summer Institute in Statistics for Big Data (SISBID), Visualization of Biomedical Big Data with Dianne Cook and Heike Hoffman

- Provided support during lectures on structured development of static and interactive graphics using `ggplot2` in `R`, especially in the context of exploring big data.

Amazon, Modeling and Optimization within Supply Chain Optimization Technologies, Seattle, WA
Research Scientist Intern, Andrew Bruce and Chunyi Wang, June - September 2017

- Collaborated with non-statisticians to define business/financial deliverables followed by collaborations with senior statisticians determining appropriate modeling goals
- Pulled, cleaned, and prepared data to be used in modeling
- Built predictive models to be deployed at a large scale
- Software: `R, Python` (`Pandas, XGBoost`), `SQL`

Yaqui Molecular, Seattle, WA *Statistics Consultant, 2015-2016*

- Collaborated with clinical immuno-oncologists to determine appropriate statistical methodology for identifying biomarkers associated with cancer outcomes.
- Ran statistical analyses focusing on identifying predictive/prognostic biomarkers in oncology, which includes survival analyses using Cox proportional hazards regression model.
- Based on simulation-based parametric power analyses, provided recommendations for future studies, such as which biomarkers to collect and estimated sample size needed to confidently detect an effect.
- Software: `R and Rmarkdown` for manuscript preparation

California State University Fullerton, Department of Mathematics, Fullerton, CA
Collaborator with Mori Jomshidian, NIH Funded MARC Program, 2011-2013

- Built logistic regression model, which predicts presence of multiple sclerosis based on performance in cognitive tasking tests.
- Software: `R`

University of Wisconsin, Madison, Department of Biostatistics, Madison, WI *Collaborator with Sushmita Roy, NSF Funded IBS-SRP, 2012*

- Ran genome-wide association study to determine association between Alzheimer's cognitive disease and single-nucleotide polymorphisms (SNPs).
- SNP data ($>$ 15 gigabytes) collected from Alzheimer's Disease Neuro-Imaging database.
- Software: `PLINK, Python`

Honors, Awards, Scholarships:

- OpsTech Science Fair Grand Prize, "Think Big Award," with Sapphire Manthorpe (co-presenter), 2017
- Trainee, NIH Statistical Genetics Training Grant, University of Washington, 2013-2016
- Minority Access to Research Careers (MARC) Fellowship (NIH), 2011-2013
- CSUF Natural Sciences and Mathematics Symposium Competition Winner, 2012
- SACNAS, Outstanding Poster in Statistics, 2012
- CSUF Special Recognition for Undergraduate Research, 2013
- Joint Mathematics Meeting, San Diego, Outstanding Poster, 2013

Publications:

- Hughes, J., B. Williamson, C. Krakauer, G. Chau, B. Ortiz, J. Wakefield, C. Hendrix, K. Amico, T. Holtz, LG Bekker, & R. Grant. Combining Information to Estimate Adherence in Studies of Pre-Exposure Prophylaxis for HIV Prevention: Application to HPTN 067. Statistics in Medicine. 2022 Mar 15;41(6):1120-1136. doi: 10.1002/sim.9321. Epub 2022 Jan 25. PMID: 35080038; PMCID: PMC8881405.
- Ortiz, B. and A. Sinha, (2022). Using Image Transformations to Learn Structure. https://arxiv.org/abs/2112.03419 *Under Review*
- Ortiz, B. and N. Simon, (2022). Mesh-Based Solutions for Nonparametric Penalized Regression. https://arxiv.org/abs/2112.0 *Under Review*
- Soni, A., Golari, M., Ortiz, B., & Zheng, Da, (2022). Graph Representation Learning for Outbound Transportation Network. *In Submission*

- Ortiz, B., M. Jamshidian, and A. Khatoonabadi, (2013). A Statistical Approach to Validate a Cognitive Test for Multiple Sclerosis. Dimensions. Vol. 15. Pp. 105-114
- Ortiz, B., S. Roy, and R. Atlas, (2012). Identification and Characterization of Predictive Genomic Markers in Alzheimer's Disease. IBS-SRP Journal. pp. 121-125

Conferences, Workshops, and Speaking Roles

- Operations Technology Science Fair (OpsTech Science Fair), Amazon Operations Research. July 2017. Poster presentation. Amazon Confidential.
- BayesComp 2018, International Society for Bayesian Analysis. March 2018. Poster presentation. "Mesh Based Solutions for Nonparametric Regression."
- Society for the Advancement of Chicanos and Native Americans in Science (SACNAS). October 2019. Organizer of Amazon sponsorship and speaker,"Network Design and Optimization in the Outbound Network."
- University of Washington, Department of Biostatistics, Master's Capstone Seminar. January 2021. "Biostatistics for Industry." *current mentor for program*
- Senior Operations and Research Workshop (SOAR 2021). October 2021. Co-founder, organizer, moderator, and speaker. Amazon Confidential.