

Luis Damiano

LOO-is dahm-YAN-uh
he-him-his

Ph.D. Candidate in Statistics
Snedecor Hall, Ames, IA 50011.

✉ ldamiano@iastate.edu  [luisdamiano](https://github.com/luisdamiano)  [luisdamiano.github.io](https://github.com/luisdamiano.github.io)

Education

Iowa State University, Department of Statistics 2018-Present

Ph.D. Candidate in Statistics. Adviser: Dr. [Jarad Niemi](#)

Iowa State University, Department of Statistics 2018-2020

Master of Science in Statistics. Adviser: Dr. [Jarad Niemi](#)

Creative Component: “*The RITAS algorithm: a constructive yield monitor data processing algorithm*”.
[10.48550/arXiv.2209.11313](https://doi.org/10.48550/arXiv.2209.11313) ([Slides](#))

Universidad Nacional de Rosario, Department of Statistics 2014-2017

Master of Science in Applied Statistics. Adviser: [María Teresa Blaconá](#).

Thesis: “*Evaluating Forecast Accuracy of GARCH Volatility Models Applied to Daily Stock Prices in Argentina*”.
([Thesis](#); [Slides](#))

Pontificia Universidad Católica Argentina, Department of Administration 2006-2010

Bachelor of Business Administration, *summa cum laude*.

Other Graduate Education

The Statistical and Applied Mathematical Sciences Institute (SAMSI) 2019

Industrial Math/Stat Modeling Workshop for Graduate Students. Two-week workshop. Part of a small research group mentored by Drs. [Kaufeld](#) and [Dorn](#). Data analysis, report writing, and the oral presentation.

Universidad Nacional de Rosario, Department of Administration 2011-2014

Master of Science in Finance, coursework requirement complete.

Research Interests

Bayesian statistics, computational statistics, Gaussian processes, design and analysis of computer experiments, surrogates, uncertainty quantification.

Publications

Published

- Nowatzke, M., **Damiano, L.**, Miguez, F. E., McNunn, G. S., Niemi, J., Schulte, L. A., Heaton, E. A., & VanLoocke, A. (2022). “*Augmenting agroecosystem models with remote sensing data and machine learning increases overall estimates of nitrate-nitrogen leaching*”. Environmental Research Letters. [10.1088/1748-9326/ac998b](https://doi.org/10.1088/1748-9326/ac998b)
- Ward E., Anderson S., **Damiano L.**, Hunsicker M., Litzow M. (2019) “*Modeling regimes with extremes: the bayesdfa package for identifying and forecasting common trends and anomalies in multivariate time-series data*”. The R Journal. [10.32614/RJ-2019-007](https://doi.org/10.32614/RJ-2019-007)
- **Damiano L.**, Peterson B., Weylandt M. (2018) “*A Tutorial on Hidden Markov Models using Stan*”. Zenodo. Published in the proceedings of [StanCon 2018](#) and invited to present. [10.5281/zenodo.1284341](https://doi.org/10.5281/zenodo.1284341)

In Preparation

- **Damiano L.**, Johnson M., Teixeira J., Morris M.D., Niemi J. “Automatic Dynamic Relevance Determination for Gaussian process regression with high-dimensional functional inputs”. Submitted to Technometrics. [10.48550/arXiv.2209.00044](https://doi.org/10.48550/arXiv.2209.00044)
- **Damiano L.**, Niemi J. “The RITAS algorithm: a constructive yield monitor data processing algorithm”. [10.48550/arXiv.2209.11313](https://doi.org/10.48550/arXiv.2209.11313)
- Dutter C., **Damiano L.**, Niemi J., Miller B., Schulte L.A., Liebman M., Helmers M., Cruse R., McDaniel M. “Contour prairie strips affect adjacent soil but have only slight effects on crops”. To be submitted to Field Crops Research.

Other publications

- **Damiano L.**, Niemi J. “Quantification of the impact of prairie strips on grain yield at NSNWR”. Technical report for the [STRIPS experiment](#). ([Report](#))

Software

- Ward E., Anderson S., **Damiano L.**, Hunsicker M., Litzow M. bayesdfa: Bayesian Dynamic Factor Analysis (DEFA) with Stan. An R package. ([CRAN](#))
- **Damiano L.**, Niemi J. yieldMaps: Yield Monitor Data Processing via the RITAS Algorithm. An R package. ([GitHub repository](#))
- **Damiano L.**, Peterson B., Weylandt M. BayesHMM: Full Bayesian Inference for Hidden Markov Models. An R package. ([GitHub repository](#))

Presentations

Talks

- NASA JPL Uncertainty Quantification for Remote Sensing Inverse Problems**, Virtual October 2022
- “Automatic Dynamic Relevance Determination for Gaussian process regression with functional inputs”.
- Pacific Northwest National Laboratory - ISU workshop**, Virtual August 2022
- “Automatic Dynamic Relevance Determination for Gaussian process regression with functional inputs”.
- Los Alamos National Laboratory**, Virtual August 2022
- “Non-stationary log-Gaussian Cox process for source separation in the context of the Interstellar Boundary Explorer mission”.
- SIAM Conference on Uncertainty Quantification**, Virtual April 2022
- “Automatic Dynamic Relevance Determination for Gaussian process regressions with functional inputs”. ([Slides](#))
- NASA JPL Uncertainty Quantification for Remote Sensing Inverse Problems**, Virtual October 2021
- “Automatic Dynamic Relevance Determination of atmospheric states over vertical pressure grids for the MLS forward model emulation”.
- Los Alamos National Laboratory**, Virtual September 2020
- “Emulation of Agricultural Production Systems sIMulator (APSIM)”. Joint invited seminar with Dr. [Jarad Niemi](#). ([Slides](#))
- Science-based Trails of Rowcrops Integrated with Prairie Strips Research symposium**, Ames, IA Jan 2020
- “An autonomous algorithm for smooth yield maps”. ([Slides](#))

- R/Finance 2019**, Chicago, IL May 2019
- “*Augmenting Trading Systems with Hidden Markov Models using BayesHMM*”.
- R/Finance 2018**, Chicago, IL June 2018
- “*Hierarchical Hidden Markov Models in High-Frequency Stock Markets*”. ([Slides](#))
- Inter-American Statistical Conference 2017**, Rosario, Argentina October 2017
- “*Daily Stock Price Forecasts in Argentina Using Hidden Markov Models*”. ([Slides](#))
- R/Finance 2017**, Chicago, IL May 2017
- “*A Quick Introduction to Hidden Markov Models Applied to Stock Volatility*”. ([Slides](#); [Notebook](#))

Posters

- Conference on Applied Statistics in Agriculture and Natural Resources**, Virtual May 2021
- “*Automatic Dynamic Relevance Determination of soil properties over different soil layers for yield prediction using APSIM*”. ([Poster](#))
- University of Arkansas 44th Annual Spring Lecture Series**, Fayetteville, AR April 2019
- “*BayesHMM: Full Bayesian Inference for Hidden Markov Models*”. ([Poster](#))

Research Experience

Los Alamos National Laboratory Summer 2022

Graduate Research Assistant to Drs. [Brian Weaver](#) and [David Osthus](#) for the Interstellar Boundary Explorer LDRD. I built a prototype for the spatial modeling of energetic neutral atoms sourced at the boundaries of the heliosphere via non-stationary log-Gaussian Cox processes for (i) signal estimation, and (ii) source separation between globally distributed flux and [the enhanced emission ribbon](#).

Iowa State University 2018-2022

Research Assistant for the Consortium for Cultivating Human and Naturally Regenerative Enterprises (C-CHANGE) and Foundation for Food and Agriculture Research (FFAR). Work on (i) Bayesian hierarchical spatio-temporal models, and (ii) statistical emulation of computer experiments.

Universidad Nacional de Rosario 2016-2017

Graduate thesis for the M.Sc. in Applied Statistics program.

- Title: “*Evaluating Forecast Accuracy of GARCH Volatility Models Applied to Daily Stock Prices in Argentina*”. ([Thesis](#); [Slides](#))
- Adviser: [María Teresa Blaconá](#).

GSoC Student for R Project for Statistical Computing Summer 2018

- Title: “*Full Bayesian Inference for Hidden Markov Models*”.
- Mentors: [Brian Peterson](#) and Dr. [Michael Weylandt](#).
- [GitHub repository](#)

GSoC Student for R Project for Statistical Computing Summer 2017

- Title: “*Bayesian Hierarchical Hidden Markov Models applied to financial time series*”.
- Mentors: [Brian Peterson](#) and Dr. [Michael Weylandt](#).
- [GitHub repository](#)

Honors and Awards

- **Vince Sposito Statistical Computing Award**, Department of Statistics, ISU 2022
- **Jebe Fellowship**, Department of Statistics, ISU, 2018-2019
- **Student Travel Funding**, University of Arkansas 44th Annual Spring Lecture Series, 2019
- **Student Travel Award**, R/Finance Conference, 2019
- **Student Travel Award**, R/Finance Conference, 2018
- **Student Travel Award**, R/Finance Conference, 2017

Mentoring

- **Benedict Neo** (2022). *“Development of WEPPR: an R interface to the water erosion prediction project computer model”*. Senior undergraduate student in Statistics and Computer Science at Iowa State University.
- **Aridania Gerardo** (2021). *“Bayesian Hierarchical Model for drop probabilities”*. Senior undergraduate student in Anthropology and Statistics at Iowa State University. Currently, Ph.D. student in Biological Anthropology at the University of Arkansas.

Service

- Reviewer for [METRON Journal](#), [PeerJ Computer Science](#).
- Maintainer of the [yield monitor data repository](#) for the [STRIPS experiment](#) (2018-present).
- Active member of the open source community and similarly-spirited collaborative endeavors, e.g., Libera.chat, StackExchange (2015-present).
- Statistical analysis of benchmark data for the [LumoSQL](#) open-source project (Fall 2022).
- Founder and leader of the Gaussian Process reading group at Iowa State University (Spring 2019).

Teaching Experience

Co-Instructor

Universidad Nacional de Rosario, Department of Statistics Spring 2018
Time Series Analysis (graduate level): Stationary ARMA Processes, Models of Non-stationary Time Series, Seasonality, Maximum Likelihood Estimation, Diagnostics and Model Selection, Forecasting, Intervention and Detection of Outliers. Introduction to State-Space Models. Instructor: M.T. Blaconá.

Teaching Assistant

Iowa State University, Department of Statistics Fall 2022
STAT 266 Introduction to Business Statistics I (undergraduate level): instructor.

Iowa State University, Department of Statistics 2018-2019
STAT 544 Bayesian Statistics (graduate level).
STAT 101 Principles of Statistics (undergraduate level): instructor of laboratory sessions.

Pontificia Universidad Católica Argentina, Department of Administration Fall 2010
Finance II (undergrad): Valuation & Capital Budgeting, Return & Risk, Capital Structure & Dividend Policy.

Short Courses

- “Data Validation” and “Data Wrangling”, Data Management Workshop (2022), Iowa State University. 15-minute presentations. Speaker.
- “Bayesian Inference and Volatility Modeling Using Stan”., R/Finance Conference (2019), Chicago, IL. 1-hour tutorial. Co-instructor with Dr. [Michael Weylandt](#).
- “R and Data Visualization”, Midwest Big Data Summer School (2019). Iowa State University. 1-day session. Assistant.
- “Bayesian Inference and Volatility Modeling Using Stan”., R/Finance Conference (2018), Chicago, IL. 1-hour tutorial. Co-instructor with Dr. [Michael Weylandt](#). ([Slides](#))

Professional Experience

FIRST Capital Group, Head of Asset Management, Buenos Aires, Argentina 2015-2018

Development of quantitative strategies and deployment of GARCH for foreign exchange volatility, PCA of the yield curve, cross-sectional and time-series analysis on currency futures, Monte Carlo simulation to model delta-neutral commodity trading strategies, and hierarchical linear models for cohort analysis of credit portfolios.

FIRST Capital Group, Lead Structurer for ABS, Rosario, Argentina 2010-2015

Deloitte & Touche Corporate Finance Advisors prior to the spin-off in 2013. Primary responsibilities included structuring Asset-Backed Securities (ABS) as well as producing all the technical documents for the initial public offering. Quantitative aspects of the daily work included the statistical analysis of the historical performance of assets, handling databases with 100 million records, and forecasting cash flows.