

ROBERT MACDONALD

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Education

University of California, Irvine <i>PhD in Economics</i>	Spring 2024 <i>(Expected)</i>
University of California, Irvine <i>MA in Economics</i>	2019
University of San Francisco <i>BA in International and Development Economics, Minor in Mathematics</i>	2018

Dissertation

Title: “Essays in Flexible and Nonlinear Econometrics”
Chair: Ivan Jeliazkov
Committee: Ivan Jeliazkov, Fabio Milani, Eric Swanson

Fields

Econometrics, Bayesian Analysis, Time Series Analysis, Machine Learning, Discrete Data, Macroeconomics, Nonparametric Statistics

Conferences and Seminars

NBER-NSF Seminar on Bayesian Inference in Economics and Statistics	2023
California Econometrics Conference	2023
Econometrics Seminar, UC Irvine	2023
Macroeconomics Brownbag, UC Irvine	2023
Economics Poster Session, UC Irvine	2021, 2023

Awards and Honors

Graduate Dean’s Fellowship	2023
Graduate Division Completion Fellowship	2023
Economics Department Summer Research Fellowship	2021, 2023
Best Econometrics Paper Award	2021
Michael and Millie Lehmann Award for Outstanding Undergraduate Student in Economics	2017

Working Papers

“Specification of FAVAR Models” *Job Market Paper*
“A Nonparametric Endogenous Switching Model with an Application to Macroeconomics”
“A Composite Mean Function for Count Data Analysis”, with Alexander Luttmann and Ivan Jeliazkov

Work in Progress

“Modeling Multivariate Economic Time Series Data with Model Tree BART”

“Sparse Bayesian Dynamic Factor Modeling with Order-Invariant Identification and Unknown Factor Dimensionality”

“A Nonlinear Dynamic Factor Model with Time-Varying Parameters”

Experience

Data Scientist **2023–2024**

Sana Currents

- Predicted the success of biotech firms using random forest
- Designed advanced regime-switching models to forecast stock price movements

PhD Candidate in Economics **2018–2024**

University of California, Irvine

- Innovated scalable shrinkage techniques for model selection in factor-augmented vector autoregressions
- Introduced extensions to the EM algorithm for efficient model estimation
- Leveraged Model Tree BART to outperform stochastic volatility models when forecasting exchange rate volatility
- Tested the efficacy of financial factors in explaining asset returns
- Developed novel regime-switching model for identifying and forecasting business cycles in real time
- Created a new modeling approach for count data to overcome deficiencies in Poisson regression
- Demonstrated that certain airport regulations have a positive impact on airline efficiency
- Communicated findings to audiences of diverse backgrounds using visual presentations

Teaching Assistant **2018–2023**

University of California, Irvine

- Trained students with no prior experience in core statistical concepts and coding for data analysis
- Evaluated performance and provided feedback for up to 100 students per quarter

Graduate Student Researcher **2022**

University of California, Irvine

- Employed tree-based methods to evaluate baseball player performance in Python
- Processed nonstandard data from over 10 million observations to obtain better forecasts
- Used supervised learning to train classification trees with over 99.9% out-of-sample predictive accuracy

Data Assistant **2018**

Perigon Wealth Management

- Oversaw digitization of client records

Research Assistant

2017

University of San Francisco

- Investigated the relationship between levels of environmental, social, and governance criteria and firm profits
- Evaluated various data sources for measuring corporate reputation

Teaching

Graduate Teaching Assistant

- Statistics and Econometrics II
- Statistics and Econometrics III

Undergraduate Teaching Assistant

- Probability and Statistics for Economics II
- Principles of Microeconomics
- Applied Econometrics II
- Economics of Asymmetric Information
- Intermediate Macroeconomics
- Intermediate Microeconomics
- Economics of International Business
- International Finance

Technical Skills

Econometric Methods: Bayesian Analysis, Machine Learning, Time Series Analysis, State Space Models, Stochastic Volatility, Spatial Analysis, Model Validation, Optimization, MCMC, DSGE Models, Discrete Choice Models, Classification, Panel Data Methods, Causal Inference

Computational Software: R, MATLAB, Stata, Jupyter Notebook, MS Excel

Data Analysis Packages: R – glmnet, ranger, bart, mice, stan, rcpp, Python – numpy, pandas, scikit-learn, xgboost

Programming Languages: Python, C++, SQL

Document Processing Software: L^AT_EX, Beamer, MS Word, MS PowerPoint

References

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