PEDRO LIMA

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RESEARCH INTERESTS

Probabilistic Machine Learning, Time Series Analysis and Bayesian Computing.

EDUCATION

The University of Texas at Austin, McCombs School of Business *Fall 2022 -*
PhD in Statistics
Advisor: Prof. Dr. Carlos M. Carvalho

University of São Paulo *January 2019 - March 2021*
Master of Science in Economics
Advisor: Prof. Dr. Márcio Poletti Laurini.
Thesis: Does non-linearity matter for forecasting Sovereign CDS? A Deep Learning approach

Federal University of Pernambuco *March 2013 - February 2017*
Bachelor of Science in Economics
Advisor: Prof. Dr. Paulo Henrique Vaz

Aarhus University - School of Business and Social Sciences *August 2015 - Jan 2016*
Visiting Scholar

CONFERENCES

Pedro A. Sá Barreto de Lima, Carlos M. Carvalho, Hedibert F. Lopes, and Andrew Herren. "Large Bayesian Additive Vector Autoregressive Tree Models." – *European Seminar on Bayesian Econometrics 2024. Orebro, Sweden.*

RESEARCH EXPERIENCE

Large Bayesian Additive Vector Autoregressive Models
Supervisor: Prof. Dr. Carlos M. Carvalho and Prof. Dr. Hedibert Lopes.

- Extended Multivariate Autoregressive Bayesian Additive Vector for high-dimensional data, incorporating a sparsity-inducing Dirichlet hyperprior for improved variable selection. Proposed a novel prior structure that prioritizes lower-lag variables in tree splits, inspired by the Minnesota Prior.
- Demonstrated empirical improvements over baseline BART and BVAR models in handling time-dependent macroeconomic data.

State Space Posterior Sampling using Inverse Bayesian Computation
Supervisor: Prof. Dr. James Scott

- This research aims to investigate scalable Bayesian computing methods, particularly simulation-based inference. Specifically, the focus is on globally amortized Bayesian inference using invertible neural networks known as BayesFlow to estimating the filtered distribution of a State Space Model.

ACADEMIC EXPERIENCE

McCombs School of Business *Spring 2024*
Undergraduate Teaching Assistant Data Science for Business (Jared S. Murray)

McCombs School of Business *Fall 2023*
Undergraduate Teaching Assistant Data Science for Business - Honors (Magdalena Bennett)

McCombs School of Business *Summer 2023*
Graduate Teaching Assistant Machine Learning for Business (James Scott)

Department of Economics, University of São Paulo *Jan 2020 - March 2020*
Graduate Teaching Assistant Statistics (Márcio Laurini)

REFEREE

Journal of Business & Economic Statistics

WORK EXPERIENCE

Tullett Prebon Brazil - TP ICAP GROUP, São Paulo *August 2021 - July 2022*
Macroeconomic Strategist

- Developed and automated ETL processes for a Macroeconomic and Fixed Income Data repository using Python and SQL/Oracle.
- Automated core inflation calculations for accuracy and efficiency.
- Monitored Central Bank Policy actions for Brazil and the USA, evaluating their effects on financial markets.
- Facilitated real-time information distribution to domestic and international institutional investors, including Hedge Funds and Investment Banks, via Bloomberg Chat.

Banco Modal, São Paulo *Dec 2020 - July 2021*

- Collaborated in developing an ETL for derivatives pricing, focused on structured transaction certificates (COE) at the bank's brokerage. Created modeling libraries and numerical methods using Python and SQL/Oracle to automate margin call processes for retail clients.
- Pioneered the implementation of foundational models, paving the way for an Excel add-in with a C++ Backend.

LANGUAGES

English (Fluent), Portuguese (Native)

COMPUTER SKILLS

R, Stan, Python, Matlab, SQL, LaTeX, C++