

PEDRO VALLOCCI

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EDUCATION

Ph.D. in Economics

Expected 2024

University of California, Santa Cruz

Santa Cruz, CA

Exchange student at UC Berkeley and UCLA. *Advisor*: Prof. Galina Hale. *GPA*: 3.75

Relevant courses: Econometrics, ML, Bayesian Inference, Statistical Data Analysis, Macrofinance, Asset Pricing

Research focus: Finance, Innovation, Productivity

M.Sc. in Electrical Engineering

2011

University of Kaiserslautern

Kaiserslautern, Germany

Relevant courses: Nonlinear and Linear Control Theory, Robust Control, Real-Time Systems

B.Sc. in Electrical Engineering

2007

University of Brasilia

Brasilia, Brazil

Relevant courses: Multivariate Calculus, Numerical Analysis, ODE, PDE, Linear Algebra, Information Theory

Thesis: “Link Performance Models in System-Level Simulations of MIMO/OFDM Networks” (*Matlab · C++*)

EXPERIENCE

Macro Research Intern @ SPX Capital Management LLC

New York, NY (Jun/23 - Aug/23)

- Summer intern at the Macro Research team of SPX, a global macro hedge fund with \$14.0B+ AUM.
- Developed a MIDAS mixed-frequency nowcasting model of US Consumption (PCE) using macroeconomic and news data (WSJ topic loadings, found by LDA). Performed variable selection with Random Forest and sparse-group LASSO, integrating dynamic factors. Outperformed SPF. Joint work with Quant team (*Python · R*)
- Integrated FRED API to retrieve vintage data for 100+ US macroeconomic variables, customized to our specific requirements

Ph.D. Candidate @ UCSC

Santa Cruz, CA (Aug/19 -)

- *Selected Research*:
 - **Measuring Knowledge Capital Risk**: I propose a methodology to identify firms vulnerable to knowledge capital-related risks, using Latent Dirichlet Allocation (LDA) for topic decomposition of textual risk factors disclosed in 40,174 annual reports of public firms. Additionally, the paper quantifies these risks by examining the return patterns of these firms. (*Python*).
 - **Intangible Capital and Firm Hiring Dynamics** (*with Brenda Samaniego de la Parra*): We examine the dynamics of how vacancy postings are influenced by firms’ intangible capital. We find that firms with a higher intangibility are less inclined to disclose wage information, suggesting increased bargaining power for workers. (*Python · Stata*)
- *Instructor of Record*: Master’s-level Python (Sp/2024), Introductory Macroeconomics (Su/2022)
- *As Teaching Assistant*: Taught Master’s-level Finance I, Machine Learning, Money and Banking, Int’l Trade, Intermediate Macro, Personal Finance, and more. Recognized with the 2023 Excellence in Teaching Award.
- *As Research Fellow*: Classified firms’ operational scope as local or nationwide using NLP techniques on website content and a test set. Identified key websites for 50k firms via Python and Google Search API; scraped content with BeautifulSoup; processed text using NLTK; classified using Random Forest and SVM. (*Python*).

Advisor @ Central Bank of Brazil (BCB)

Brasilia, Brazil (Jun/14 -)

- Spearheaded development of an object-oriented MATLAB inflation forecasting framework, driving 15-fold expansion in benchmark scenario output for the Monetary Policy Committee while enhancing accuracy and efficiency.
- Developed and taught 20-hour course in MATLAB Object-Oriented Programming at BCB Corporate University.
- Collaborated with a team to transition BCB's DSGE inflation model from Dynare to Julia, adapting Bayesian estimation, Kalman filtering, and multithreading, resulting in significant performance improvements.
- Generated key macroeconomic forecasts for key Asian economies (China, Japan, India), providing the MPC with valuable insights and early indicators for Brazil's major export partners

Software Engineer @ Knorr-Bremse AG

Munich, Germany (May/11 - Apr/13)

- Developed, documented, and tested on-site brake software for Stuttgart's Light-Rail trains (*ASCET*)
- Verified and documented brake software for 5+ cities' underground train systems

PROFESSIONAL CERTIFICATES

Data Science Specialization ([link](#))

IBM

Financial Engineering and Risk Management Specialization ([link](#))

Columbia University

SKILLS

Technical: Python (numpy, pandas, statsmodels, tensorflow, keras, spacy, gensim, scikit-learn), R, MATLAB, Julia, STATA, SQL; Natural Language Processing, Machine Learning

Languages: Portuguese (native), English, German, Spanish (fluent); Italian and French (basic)

CITIZENSHIP

Brazil, Italy. US: STEM-OPT holder; I-140 approved

REFERENCES

Galina Hale (main advisor)
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