

# ALEX MONITO NHANCOLOLO

*PhD Student of Statistics and Probability*

Institute of Mathematics and Statistics, University of São Paulo, Brazil

ORCID | LinkedIn | [amnhancololo@gmail.com](mailto:amnhancololo@gmail.com) | [amnhancololo@ime.usp.br](mailto:amnhancololo@ime.usp.br) | +55 35 99409-233\*

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## PERSONAL PROFILE

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A. M. Nhancololo is a Ph.D. student in Statistics and Probability at the Institute of Mathematics and Statistics, University of São Paulo (IME-USP). He holds an M.Sc. in Statistics and Agricultural Experimentation from the Federal University of Lavras (UFLA), where he received the Best Thesis Award (2024), and a Bachelor of Education in Mathematics with a specialization in Statistics from Universidade Save (Mozambique). He is also pursuing an M.Sc. in Financial Engineering at WorldQuant University and an MBA in Artificial Intelligence and Big Data at the Institute of Mathematical and Computer Sciences, University of São Paulo (ICMC-USP). He was awarded third place in the Spatial AI Challenge 2024 (I-GUIDE), together with Julian Huang and Yue Lin (University of Chicago). His primary research interests lie in spatio-temporal statistics and their applications to the social sciences, environmental studies, ecology, agriculture, and medicine. Methodologically, his work focuses on natural language processing, spatial point processes, lattice/area data, geostatistics, and time-series analysis.

## EDUCATION

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|-------------------------|---|
| Ph.D. 2028 <sup>*</sup> | <b>Institute of Mathematics and Statistics, University of São Paulo, Brazil</b><br>Ph.D. in Statistics and Probability. <a href="#">Link of my academic transcript</a><br>Thesis: <b>not defined</b><br>Advisor: Airlane Pereira Alencar (Statistics)   |
| M.S. 2026 <sup>†</sup>  | <b>WorldQuant University, EUA</b><br>MS. in Financial Engineering. <a href="#">Link of my academic transcript</a>   |
| M.S. 2023               | <b>Institute of Exact Sciences and Technology, Federal University of Lavras, Brazil</b><br>M.S. in Statistics and Experimental Agriculture. <a href="#">Link of my academic transcript</a><br>Thesis: Univariate spatial point processes applied to the distribution of tree species in natural forests. <a href="#">Thesis link</a><br>Advisor: João Domingos Scalon (Statistics & Spatial Statistics) |
| B.S. 2021               | <b>Save University (formerly Pedagogical University of Gaza), Mozambique</b><br>B.S. in Mathematics and Statistics. <a href="#">Link of my academic transcript</a><br>Thesis: Analysis of the Potential Use of Three-Dimensional Models in Teaching Geometric Solids<br>Advisor: André Silvestre Cuinica (Mathematics, Meteorology & Physics)   |

## SUPPLEMENTARY EDUCATION

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|-------------------|--|
| 2026 <sup>2</sup> | <a href="#">MBA in Artificial Intelligence and Big Data</a> at the Institute of Mathematics and Computer Sciences (ICMC) – University of São Paulo (USP) |
| 2024              | <a href="#">Data Analysis with Python</a> (Duration: 73 hours), University of São Paulo (ESALQ)  |
| 2024              | <a href="#">Applied AI Lab: Deep Learning for Computer Vision</a> (Duration: 16 weeks), WorldQuant University, USA                                       |
| 2024              | <a href="#">Applied Data Science Lab</a> (Duration: 16 weeks), WorldQuant University, USA  |
| 2023              | <a href="#">Applied Geostatistics to Precision Agriculture</a> (Duration: 20 hours), State University of Campinas, UNICAMP, Brazil                       |

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<sup>\*</sup>Expected

<sup>†</sup>Expected

<sup>2</sup>Expected

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| 2023 | <a href="#">Introduction to Precision Agriculture and its Technologies</a> (Duration: 16 hours), State University of Campinas, UNICAMP, Brazil |
| 2017 | Poultry Farming (Duration: 32 hours)   |
| 2017 | Electrical Installation (Duration: 32 hours)   |

## PROFESSIONAL APPOINTMENTS

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|                          |  |
|--------------------------|--|
| 01/07/ 2025<br>(current) | Teaching Assistant of Introduction to Data Analysis (MAE0261), University of São Paulo (Supervisor: Prof. Airlane Pereira alencar)                                 |
| 01/01-30/06-2025         | Teaching Assistant for Introduction to Data Science (MAE5905), University of São Paulo (Supervisor: Prof. Pedro A. Morettin), <a href="#">Link</a>                 |
| 2022                     | Data Analyst, <a href="#">GALP Total Energy</a>  |
| 2020-2021                | High School Mathematics Teacher, Chongoene Secondary School  |
| 2018–2021                | Teaching Assistant for Algebra I & II, <a href="#">Save University</a> (Supervisor: Prof. André Silvestre Cuinica)   |
| 2018–2020                | Teaching Assistant for Integral Calculus and Euclidean Geometry, <a href="#">Save University</a> (Supervisors: Prof. José Portez Sibinde & Eduardo G. Tiago Macie) |

## AWARDS & HONORS

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|------|--|
| 2025 | <b>2024 Best Dissertation Award</b> , Graduate Program in Statistics and Experimental Agriculture, Federal University of Lavras. <a href="#">Link</a>  |
| 2025 | <b>Third Place</b> , Spatial AI Challenge 2024: AI-ready spatial data, machine learning models, and applications, I-GUIDE (Institute for Geospatial Understanding). <a href="#">Link</a><br><b>Title:</b> Pipeline for Roof Material and Geometry Classification<br><b>Team:</b> Julian Huang (University of Chicago)   Alex Monito Nhancololo (University of São Paulo)   Yue Lin (University of Chicago) |
| 2025 | <b>Certificate, Foundations of Financial Engineering</b> , WorldQuant University. <a href="#">Link</a>   |

## PUBLICATIONS

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### Publications

- Victor, A.; Nhancololo, A. M.; Bah, H. A. F.; Xavier, S. P.; Gotine, A. R. M. E.; Moreira, V. A.; Charles, C. M.; Cerqueira-Silva, T.; Rondó, P. H. National and regional temporal trends and forecasting of preterm birth in Brazil: Evidence from national Birth data (2014–2023) with projections to 2030. *BMC Pregnancy and Childbirth*, 2025. DOI: [10.1186/s12884-025-08536-6](#)
- Oliveira, W. A.; Scalón, J. D.; Nhancololo, A. M. Characterization of the spatial distribution of *Copaifera langsdorffii* and *Xylopia brasiliensis* in an urban fragment of the Atlantic Forest domain. *Ciência Rural*, 2025. DOI: [10.1590/0103-8478cr20240132](#)
- Nhancololo, A. M.; Scalón, J. D.; Pereira, F. A. C.; Oliveira, W. A.; Silva, B. M. Comparison between the laboratory method and the Stolf penetrometer in soil density analysis: a study using geostatistical methods. *SIGMAE*, vol. 13, Jan. 2024. DOI: [10.29327/2520355.13.1-7](#)
- Nhancololo, A. M.; Cuinica, A. S. Analysis of the Potential of Three-Dimensional Models in Teaching and Learning Spatial Geometry in 9th Grade: A Case Study of Chongoene Secondary School. *Kavenye Scientific Journal*, vol. 1, pp. 44–60, 2023. [\[Link\]](#)

### Accepted Papers

5. Paludo, G. F.; Nhancololo, A. M.; Sousa Bueno Filho, J. *petioleFborder*: an R package with algorithms for automatic detection of petiole from the coordinates of leaf contour. *Plant Biosystems*, 2025. [\[Link\]](#)
6. Damaceno, G. P.; Paludo, G. F.; Nhancololo, A. M.; Scalón, J. D.; Sabe, E. M.; da Silva, G. F.; Bueno-Filho, J. S. S.; da Silva, D. M. Behavior of regression models for area data with outliers: an application to tuberculosis incidence. *Sigmae*, 2025. [\[PT paper Link\]](#)

## WORKING PAPERS

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1. Nhancololo, A. M.; Alencar, A. P.; Paludo, G. F.; Zuniga, K.; Cuinica, A. S.; de Oliveira, W. A.; Damaceno, G. P.; Sabe, E.; Ferreira, V.; Lhone, M. A.; Scalón, J. D. The Dynamics of Insurgent Hotspots in Cabo Delgado, Mozambique: A Bayesian Spatio-Temporal Analysis (2017–2024) with Forecasts to 2030. *Journal of the Royal Statistical Society: Series C*, 2025. [Link](#)
2. Nhancololo, A. M.; Alencar, A. P.; Cuinica, A. S.; Paludo, G. F.; Damaceno, G. P.; Lhone, M. A. Just-in-Time Repression: Modeling Police Violence Against Civilians in Mozambique (1997–2025) with Generalized Additive Models. *Sigmae*, 2025. [Link](#)
3. Nhancololo, A. M.; Paludo, G. F.; Gianasi, F. M.; de Oliveira, W. A. Spatial patterns of native tree species of an Atlantic Rainforest fragment and its association to edaphic variables. **(Based on the author's Master's thesis)** *Iranian Journal of Science*, 2025.
4. Paludo, G. F.; Nhancololo, A. M.; Mendes, A. M.; Cayo, A. C.; Huacani, R. C.; Damaceno, G. P.; Filho, J. S. B. A memory game that explores variability. *Sigmae*, 2025. [Link](#)

## TOOLS & SOFTWARE

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- **Statistical Computing & Programming:** R, Python, SQL, SPSS, SISVAR
- **Productivity Tools:** Microsoft Office, LibreOffice

## PRESENTATIONS

### TALKS

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|------|---|
| 2025 | Nhancololo, A. M.; Alencar, A. P. “The Dynamics of Insurgent Hotspots in Cabo Delgado, Mozambique: A Bayesian Spatio-Temporal Analysis (2017–2024)”. Presented on November 11, 2025, at the 6 <sup>th</sup> Graduate Meeting in Statistics at IME-USP, São Paulo, Brazil. <a href="#">Link</a>  |
| 2025 | Nhancololo, A. M. “Terrorism in Cabo Delgado, Mozambique: A spatio-temporal analysis of fatalities and their determinants (2017–2024) with forecasts to 2030.” Presented on August 8, 2025, at the 69 <sup>th</sup> Brazilian Region of the International Biometric Society (RBras) and the 21 <sup>st</sup> Symposium on Statistics Applied to Agricultural Experimentation (SEAGRO), Vitória, Espírito Santo. <a href="#">Slides link</a> |
| 2023 | Nhancololo, A. M.; Scalón, J. D. “Textual Data Analysis Using Natural Language Processing (NLP) in R.” (Seminar). <b>Online Access:</b> <a href="#">Link</a>  |
| 2024 | Nhancololo, A. M.; <i>et al.</i> “Geostatistical Analysis of Soil Resistivity for Cassava Cultivation – Lago Azul Farm in the Pontal do Paranapanema Region, São Paulo (SP).” XXXIII Postgraduate Congress of UFLA (Conference). <a href="#">Link</a>   |
| 2024 | Nhancololo, A. M.; Scalón, J. D.; Oliveira, W. A.; Ossifo, M. E. “Characterization of the Spatial Pattern of Fire Incidents in the Municipality of Lavras, MG.” Brazilian Region of the International Biometric Society (RBras). <a href="#">Link</a>   |

- 2024 Nhancololo, A. M.; Scalon, J. D.; Oliveira, W. A. “Spatial Modeling of Point Processes Applied to Forest Ecology: A Case Study with *Siparuna guianensis*.” Brazilian Region of the International Biometric Society (RBras). [Poster link](#)
- 2023 Nhancololo, A. M.; Scalon, J. D.; Oliveira, W. A. “Estimation of Bivariate Models for Point Processes with Spatial Attraction in Native Species.” XXXII Postgraduate Congress of UFLA. [Link](#)
- 2021 Nhancololo, A. M. “Use of the Fundamental Principle of Counting in the Teaching and Learning Process of Combinatorial Analysis.” UniSave Scientific Journeys. [Link](#)
- 2020 Nhancololo, A. M. “Exploration of the Mathematical Knowledge Involved in the Activity of a Gravedigger.” UniSave Scientific Journeys. [Link](#)
- 2019 Nhancololo, A. M. “Teaching Linear Equation Systems through Problem Solving.” UniSave Scientific Journeys. [Link](#)

## POSTERS

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- 2025 Nhancololo, A. M.; Macamo, A. M.; Cuinca, A. S.; Alencar, A. P.; Lhone, M. A. *Spatio-Temporal Variability of Precipitation in the Limpopo River Basin (1984–2023)*. [poster link](#)
- 2025 Nhancololo, A. M.; Cuinca, A. S.; Pereira, A. A.; Lhone, M. A. *Analysis of police violence against civilians in Mozambique (1994–2025)*. [poster link](#)
- 2025 Damaceno, G.; Paludo, G. F.; Nhancololo, A. M.; Sabe, E.; Silva, G. F.; Bueno Filho, J. S. S.; Silva, D. M.; Scalon, J. D. “Comparison of spatial statistical models for areal data with outliers.” *69th RBras and 21st SEAGRO*, Vitória, Espírito Santo. [Home page link](#), [Poster link](#)
- 2025 Oliveira, W. A.; Elias, R. S.; Barros, M. F.; Rosa, L. F.; Nhancololo, A. M.; Nascimento, E. S.; Nakamura, L. R.; Scalon, J. D. “Impact of social indicators on infant mortality: An approach using distributional models.” *69th RBras and 21st SEAGRO*, Vitória, Espírito Santo. [Home page link](#), [Poster link](#)
- 2025 Oliveira, W. A.; Barros, M. F.; Hoffmann, Y. T.; Rosa, L. F.; Nhancololo, A. M.; Nakamura, L. R.; Scalon, J. D. “Incorporating GMRF-based distributional models for analyzing violence against women in Minas Gerais.” *69th RBras and 21st SEAGRO*, Vitória, Espírito Santo. [Home page link](#), [Poster link](#)
- 2025 Paludo, G. F.; Mendes, A. M. F.; Damaceno, G.; Cayo, A. W. C.; Nhancololo, A. M.; Bueno Filho, J. S. S. “A memory game that explores variability.” *69th RBras and 21st SEAGRO*, Vitória, Espírito Santo. [Home page link](#), [Poster link](#)
- 2024 Scalon, J. D.; Oliveira, W. A.; Nhancololo, A. M.; Cordeiro, L. L.; Rosa, L. F. “Structured Space-Dependent Calibration Model.” Brazilian Region of the International Biometric Society (RBras).
- 2023 Nhancololo, A. M.; Scalon, J. D. “Comparison between the Laboratory Method and Stolf Penetrometer in Soil Density Analysis: A Study Using Geostatistical Methods.” Mineiro Statistics Meeting (MGEST).
- 2023 Oliveira, W. A.; Scalon, J. D.; Nhancololo, A. M. “Exploring Methodologies for Analysing Non-Stationary Point Processes: An Application in Forest Data.” XXXII Postgraduate Congress of UFLA.

## PARTICIPATION IN EVENTS, CONGRESSES, EXHIBITIONS, AND FAIRS

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- 2025 6th Graduate Meeting in Statistics at IME-USP, São Paulo, Brazil
- 2025 17th Minas Gerais Meeting of Statistics (MGEST), Minas Gerais, Lavras
- 2025 69<sup>th</sup> Brazilian Region of the International Biometric Society (RBras) and the 21<sup>st</sup> Symposium on Statistics Applied to Agricultural Experimentation (SEAGRO), Vitória, Espírito Santo.
- 2024 Rbras – Brazilian Region of the International Biometric Society (Congress) - Piracicaba, São Paulo  
16th MGEST – Mineiro Statistics Meeting (Congress), Juiz de Fora, Minas Gerais

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|           | XXXII UFLA Postgraduate Congress (Congress) - Lavras, Minas Gerais   |
|           | Teaching Methods for the Bachelor's Degree in Statistics (Workshop) - Lavras, Minas Gerais   |
|           | IV Workshop in Data Science (Workshop) - Lavras, Minas Gerais  |
|           | V Northeast Forum of Statistics and Data Science (Workshop)  |
|           | XIV Summer Program of DES/ICET – UFLA (Workshop) - Lavras, Minas Gerais  |
| 2023      | Conversation Club – B1 (Workshop); Writing Workshop – B1 (Workshop); Conversation Club – A2 (Workshop); Reading Workshop – A2 (Workshop) |
|           | Corporate Education – The New Tool for Professional Advancement (Exhibition)   |
|           | II South Minas Forum of Municipal Councils for Racial Equality Policies & Related Entities – UFLA (Forum)                                |
|           | Challenges and Strategies for Promoting Racial Equality in South Minas (Symposium)   |
|           | UniSave Scientific Journeys (Series of Workshops)  |
| 2018–2021 | UniSave Scientific Journeys (series of student-led seminars)   |

## EVENT ORGANIZATION

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- 2023 – 6th UFLA Open Doors (Exhibition)
- Nhancololo, A. M.; Silva, D. M.; Pereira, G. M. C. *XVI Summer Program DES-ICET/UFLA*. 2025.

## ACADEMIC REFEREES

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|   |  |
|---|--|
| <b>João Domingos Scalon</b><br>Federal University of Lavras   | Professor, Department of Statistics<br><a href="mailto:scalon@ufla.br">scalon@ufla.br</a>                                |
| <b>Airlane Pereira Alencar</b><br>University of São Paulo     | Professor, Department of Statistics<br><a href="mailto:lane@ime.usp.br">lane@ime.usp.br</a>                              |
| <b>Luiz Ricardo Nakamura</b><br>Federal University of Lavras  | Professor, Department of Statistics<br><a href="mailto:luiz.nakamura@ufla.br">luiz.nakamura@ufla.br</a>                  |
| <b>André Silvestre Cuinica</b><br>Save University, Mozambique | Professor, Faculty of Natural and Exact Sciences<br><a href="mailto:andre.cuinica@gmail.com">andre.cuinica@gmail.com</a> |
| <b>Renato Ribeiro de Lima</b><br>Federal University of Lavras | Professor, Department of Statistics<br><a href="mailto:rrlima@ufla.br">rrlima@ufla.br</a>                                |