

Wilson Estécio Marcílio Júnior

Curriculum Vitae

SHORT BIOGRAPHY

I received my PhD in Computer Science from São Paulo State University in Brazil. My main area of interest in research is unsupervised learning for dimension reduction. My research is primarily focused on creating new methods to improve practitioners' comprehension of high-dimensional spaces.

Applications of the research and technological output include those in biology and textual contexts, among others. Additionally, I have professional experience as a research/machine learning engineer.

PERSONAL DETAILS

<i>Nationality</i>	Brazilian
<i>Date of Birth</i>	May 23, 1994
<i>Mobile Phone</i>	+55 (18) 996221084
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EDUCATION

Ph.D. in Computer Science

2019–2023

São Paulo State University — UNESP

Thesis: Toward Interpretable and Hierarchical Methods for Dimensionality Reduction.

Supervisor: Danilo Medeiros Eler, Ph.D.

M.Sc. in Computer Science

2016–2018

São Paulo State University — UNESP

Dissertation: Hierarchical exploration in scatter plot-based visualizations of dimensionality reduction techniques.

Supervisor: Danilo Medeiros Eler, Ph.D.

B.Sc. in Computer Science

2012–2016

Sao Paulo State University — UNESP

Monograph: Overlap removal techniques for dimensionality reduction visualizations.

Supervisor: Danilo Medeiros Eler, Ph.D.

WORK EXPERIENCE

Research Engineer

2023-

Nomic AI, full-time

Researching and implementing unsupervised machine learning techniques, specially those related to neighbor embeddings and search.

- Main technologies: Python, C++, Pytorch, Docker, and AWS

Machine Learning Engineer/Data Scientist

2021-2023

Globoplay, full-time

Leveraging Machine Learning for fraud detection and conversational applications.

- Using NLP for conversational applications.
- Using Transformers architectures to improve intent classification and neural search. Training these models using inputs from whole Brazil using cutting-edge technology and research.
- Topic Modeling for knowledge discovering.
- Main technologies: Pytorch, Transformers, scikit-learn, Docker, and Google Cloud Platform

Application Developer

2021-2021

IBM, full-time

Working with the orchestration of chatbot applications using Watson Assistant.

- Main technologies: Node.JS, Docker, Kubernetes, and IBM Cloud.

Graduate Teaching Assistant

2019-2022

São Paulo State University, part-time

1. Java programming language – Fall 2021; Spring 2022
2. Web development – Spring and Fall 2020, Fall 2021; Spring 2022
3. Scientific methodology – Spring 2020; and,
4. Networks – Spring 2020.

Technical Training

2019-2020

São Paulo State University, full-time

Implementation of methods for visual exploration of image and document collections.

- Convolutional neural networks for feature extraction of image collections;
- Natural Language Processing;
- Visualization through dimensionality reduction techniques;
- Use of clustering and sampling strategies to reduce data volume;
- Implementation of visual navigation strategies to understand high-dimensional datasets.

Visiting Research Student

2018-2018

Dalhousie University, Nova Scotia/Canada, from March and April

Implementation of visualization approaches for visual exploration of image collections.

- Convolutional neural networks for feature extraction of image collections;
- Visualization through dimensionality reduction techniques;
- Use of clustering and sampling strategies to reduce data volume;
- Implementation of visual navigation strategies to understand high-dimensional datasets.

Machine learning Developer

2015-2015

Duke Energy Corporation

In this work, I worked on the implementation of machine learning techniques for detecting changes in the surroundings of hydroelectric plants.

- Image pre-processing techniques to identify the points of change in hydroelectric plants.
- Project developed with the collaboration of Duke Energy Corporation and Universidade Estadual Paulista (UNESP).

SKILLS

Python, Google Cloud Platform, SQL, C/C++, Git, Pytorch, Docker, Scikit-learn, NLP, Airflow, AWS (Cloud Practitioner Certification)

SELECTED PUBLICATIONS

1. Oliveira A.D.A., Dos Santos P., **Marcílio-Jr W.E.**, Aljedaani W., Eler D.M., Eler M.M.; *Analyzing Accessibility Reviews Associated with Visual Disabilities or Eye Conditions*, 2023. **CHI '23: Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems**.
2. **Marcílio-Jr W.E.**, Eler D.M.; *HUMAP: Hierarchical Uniform Manifold Approximation and Projection*, 2022. **arXiv**.
3. **Marcílio-Jr W.E.**, Eler D.M.; *Explaining dimensionality reduction results using Shapley values*, 2021. **Expert Systems with Applications**, Elsevier.
4. **Marcílio-Jr W.E.**, Eler D.M., and Garcia R.E.; *Contrastive analysis for scatter plot-based representations of dimensionality reduction*, 2021. **Computers & Graphics**. Elsevier.
5. **Marcílio-Jr W.E.**, Eler D.M., and Breve F.; *Model-agnostic interpretation by visualization of feature perturbations*, 2021. **arXiv**.
6. **Marcílio-Jr W.E.**, Eler D.M., Garcia R.E., Correia R., Rodrigues, R.; *Visual analytics of COVID-19 dissemination in São Paulo state, Brazil*, 2020. **Journal of Biomedical Informatics**, Elsevier.
6. **Marcílio-Jr W.E.**, Eler D.M.; *From explanations to feature selection: assessing SHAP values as feature selection mechanism*, 2020. 33rd Conference on Graphics, Patterns and Images (**SIBGRAPI**), IEEE.
7. For an exhaustive list, please refer to Google Scholar.

AWARDS

- Oct/2014 - Award: 1st place in the Programming Contest (Regional Phase in Brazil).
 Nov/2023 - Award: Doctorate Honorable Mention at SIBGRAPI'23.