Curriculum Vitae - **Lucas Pascotti Valem**

Researcher with a PhD at São Paulo State University (UNESP), 29 years old
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Lucas Pascotti Valem currently works on a project aimed at creating a software to automatically detect and classify microfossils in thin sections of rocks (microscopic images) using AI in the Center for Geosciences applied to Petroleum (UNESPetro). This project is funded by Petrobras. He recently received his PhD degree in Computer Science from the São Paulo State University (UNESP) on June 28, 2024. During his PhD, he also conducted a 9-month research internship at Temple University (PA, USA) under a Fulbright fellowship. His research has resulted in numerous publications in renowned international journals and conferences, as well as several awards. He has experience in multiple areas including information retrieval, image retrieval by content, machine learning, computer vision, deep learning, image processing, pattern recognition, and parallel computing.

1.) Education

Year	Degree	Institution
2020-2024	Ph.D., Computer Science	São Paulo State University[1], Rio Claro, São Paulo, Brazil
2017-2019	M.Sc., Computer Science	São Paulo State University[1], Rio Claro, São Paulo, Brazil
2013-2016	B.Sc., Computer Science	São Paulo State University[1], Rio Claro, São Paulo, Brazil

[1]Currently, UNESP is ranked among the top-10 universities in Brazil (https://www.timeshighereducation.com).

2.) Professional Experience

- Project: *SIAM - Sistema de Identificação Automática de Microfósseis*
  Position: **Researcher and Technical Lead in Machine Learning**
  Institution: Fundunesp - Fundação para o Desenvolvimento da UNESP.
  Department: The Center for Geosciences applied to Petroleum (UNESPetro).
  Period: July/2023 - Current.
  Description: A project under the partnership UNESP-Petrobras. I work as the lead researcher of the team. The primary objective is to develop software that utilizes machine learning and other AI techniques to store and identify various types of microfossils in microscopic images.

- Project: *SiSuSMS - Sistema Supervisório de SMS para Sondas*
  Position: **Researcher and Infrastructure Technician**
  Institution: Fundunesp - Fundação para o Desenvolvimento da UNESP.
  Department: The Center for Geosciences applied to Petroleum (UNESPetro).
  Period: March/2019 - October/2020; July/2021 - Current.
  Description: A project under the partnership UNESP-Petrobras. My role was to research and develop techniques and algorithms based on computer vision and artificial intelligence with the objective of improving the security of Petrobras work environments.

3.) Research Grants

- **Graph Convolutional Networks for Weakly Supervised Representation Learning on Multimedia Classification and Retrieval**
  Supervisors: Prof. Dr. Longin Jan Latecki and Prof. Dr. Daniel Carlos Guimarães Pedronette.
  Foundation: Fulbright.
  Type: Doctoral Dissertation Research Award (DDRA).
  Period: 09/2022 - 05/2023.

- **Support for Computational Environments and Experiments Execution: Weakly-Supervised and Classification Fusion Methods.**
  Supervisor: Prof. Dr. Daniel Carlos Guimarães Pedronette.
  Foundation: Foundation for Research Support of the State of São Paulo (FAPESP) - Grant #2020/11366-0.
  Type: Technical Training (TT-4).
  Period: 11/2020 - 06/2021.

- **Selection and Combination of Unsupervised Learning Methods for Image Retrieval.**
  Supervisor: Prof. Dr. Daniel Carlos Guimarães Pedronette.
  Type: Master's Research.

Foundation: Foundation for Research Support of the State of São Paulo (FAPESP) - Grant #2017/02091-4.
Period: 05/2017 - 02/2019.

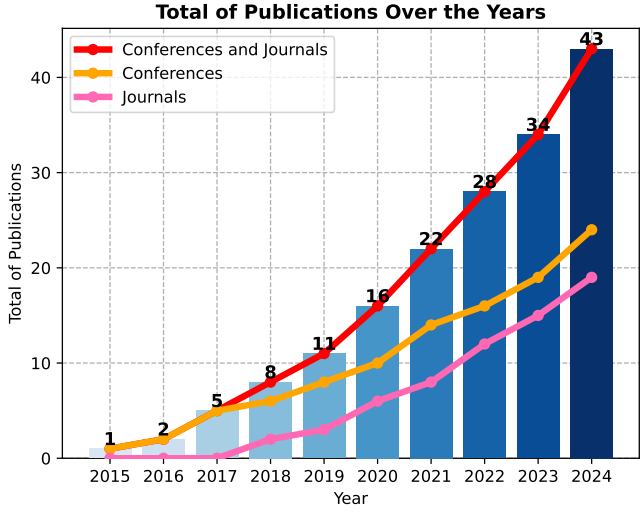
- **Re-Ranking and Rank Aggregation Approaches for Image Retrieval Tasks.**
  Supervisor: Prof. Dr. Daniel Carlos Guimarães Pedronette.
  Type: Undergraduate Research.
  Foundation: Foundation for Research Support of the State of São Paulo (FAPESP) - Grant #2014/04220-8.
  Period: 05/2014 - 12/2016.

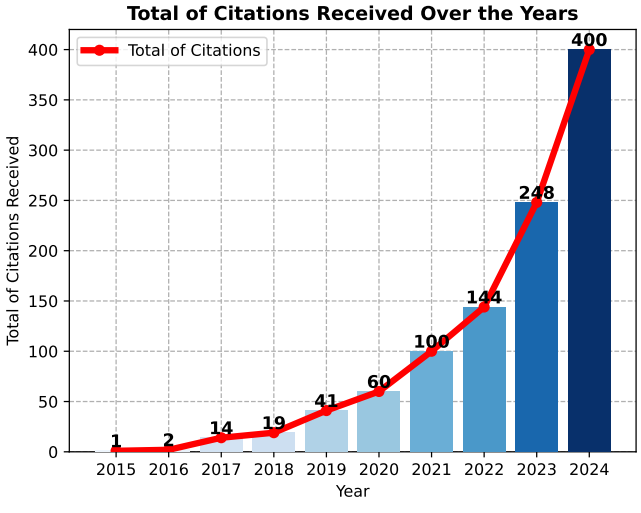
- **Development of Educational Softwares for Math Students.**
  Supervisor: Prof. Dr. Rosana Giaretta Sguerra Miskulin.
  Type: University Extension Project (PROEX Program).
  Foundation: Coordination for the Improvement of Higher Education Personnel (CAPES)
  Period: 04/2013 - 10/2013.

4.) SCIENTIFIC RESULTS [1]

Table 1: Quantitative Summary of Scientific Publications.

Type of Publication	**Quantity**	**First Author**	**Qualis A**
Journal Papers	19	7	19
Conference Papers	24	10	21
Articles in *Newsletters*	1	1	-
Total	**44**	**18**	**40**
Citations Received (*Google Scholar* on 28/10/2024)		407	
h-index (*Google Scholar* on 28/10/2024)		12	
i10-index (*Google Scholar* on 28/10/2024)		15	





- **Journal Papers (Most Relevant):**
  - VALEM, L. P.; PEDRONETTE, D. C. G. ; LATECKI, L. J. . **Rank Flow Embedding for Unsupervised and Semi-Supervised Manifold Learning.** In: IEEE Transactions on Image Processing (TIP); 2023.

[1] My citations from Google Scholar: https://scholar.google.com.br/citations?user=jnJ76JAAAAAJ

  - VALEM, L. P ; PEDRONETTE, D. C. G. ; LATECKI, L. J. . **Graph Convolutional Networks based on manifold learning for semi-supervised image classification.** In: Computer Vision and Image Understanding (CVIU), v. 227, p. 103618, 2023.
  - VALEM, L. P.; PEDRONETTE, D. C. G. . **Person Re-ID through unsupervised hypergraph rank selection and fusion.** In: Journal of Image and Vision Computing (JIVC); 2022.
  - VALEM, L. P. ; PEDRONETTE, D. C. G. . **Graph-based selective rank fusion for unsupervised image retrieval.** In: Pattern Recognition Letters (PRL), v. 135, p. 82–89, 2020.
  - VALEM, L. P. ; PEDRONETTE, D. C. G. . **Unsupervised Selective Rank Fusion for Image Retrieval Tasks.** In: Neurocomputing; v. 377, p. 182-199, 2019.
  - VALEM, L. P. ; PEDRONETTE, D. C. G. ; ALMEIDA, J. . **Unsupervised Similarity Learning through Cartesian Product of Ranking References for Image Retrieval Tasks.** In: Pattern Recognition Letters (PRL); 2018.

- **Conference Papers (Most Relevant):**

  - VALEM L. P.; KAWAI, V. A. S.; PEREIRA-FERRERO, V. H. ; PEDRONETTE, D. C. G. . **A Novel Rank Correlation Measure for Manifold Learning on Image Retrieval and Person Re-ID.** In: IEEE International Conference on Image Processing (ICIP), 2022.
  - VALEM, L. P. ; PEDRONETTE, D. C. G. . **A Denoising Convolutional Neural Network for Self-Supervised Rank Effectiveness Estimation on Image Retrieval.** In: ACM International Conference on Multimedia Retrieval (ICMR), 2021, Taipei - Taiwan.
  - VALEM, L. P. ; PEDRONETTE, D. C. G. . **An Unsupervised Genetic Algorithm Framework for Rank Selection and Fusion on Image Retrieval.** In: ACM International Conference on Multimedia Retrieval (ICMR), 2019, Ottawa - Canada.
  - VALEM, L. P. ; PEDRONETTE, D. C. G. ; BREVE, F. ; GUILHERME, I. R. . **Manifold Correlation Graph for Semi-Supervised Learning.** In: IJCNN IEEE WCCI, 2018, Rio de Janeiro - Brazil.
  - VALEM, L P. ; PEDRONETTE, D. C. G. . **An Unsupervised Distance Learning Framework for Multimedia Retrieval.** In: ACM International Conference on Multimedia Retrieval (ICMR), 2017, Bucharest - Romania.
  - VALEM, L. P.; PEDRONETTE, D. C. G.; TORRES, R. da S.; EDSON BORIN; ALMEIDA, J. . **Effective, Efficient, and Scalable Unsupervised Distance Learning in Image Retrieval Tasks.** In: ACM International Conference on Multimedia Retrieval (ICMR), 2015, Shangai - China.

5.) Awards

- **2022/2023: Fulbright Scholar (Doctoral Dissertation Research Abroad Award), Temple University (Philadelphia, PA, USA).**
- **2020: Second Best Dissertation, 33rd Contest of Thesis and Dissertations (CTD)**; "Unsupervised Selective Rank Fusion on Content-based Image Retrieval"; Congress of the Brazilian Computer Society (CSBC 2020).
- **2019 Best Master's Thesis Award; Workshop of Theses and Dissertations (WTD)**; Conference on Graphics, Patterns and Images (SIBGRAPI 2019); "Unsupervised Selective Rank Fusion on Content-based Image Retrieval"; Rio de Janeiro - Brazil.
- **2017: First Place, 36th Contest of Undergraduate Research Projects (CTIC)**, "Unsupervised Similarity Learning through Cartesian Product of Ranking References for Image Retrieval Task.", Congress of the Brazilian Computer Society (CSBC 2017).
- **2017: Honor Student in Undergraduate Research Award**, São Paulo State University (UNESP); Rio Claro, São Paulo, Brazil.

- **2016: First Place, XXVIII Congress of Undergraduate Research Projects (CIC)**, "Unsupervised Similarity Learning through Cartesian Product of Ranking References for Image Retrieval Task.", São Paulo State University (UNESP).
- **2016: Best Paper Award**; Conference on Graphics, Patterns and Images (SIBGRAPI 2016); "Unsupervised Similarity Learning through Cartesian Product of Ranking References for Image Retrieval Task."; São José dos Campos - Brasil.
- **2015: Fourth Place, XXVII Congress of Undergraduate Research Projects (CIC)**, "Effective, Efficient, and Scalable Unsupervised Distance Learning in Image Retrieval Tasks.", São Paulo State University (UNESP).
- **2015: Classified Among the Top 10, 34th Contest of Undergraduate Research Projects (CTIC)**, "Effective, Efficient, and Scalable Unsupervised Distance Learning in Image Retrieval Tasks.", Congress of the Brazilian Computer Society (CSBC 2015).

6.) Additional Information

- **Published Softwares (Most Relevant):**
  - **2024: Contextual Contrastive Loss (CCL)**: The CCL is a novel loss that uses contextual similarity to improve the image classification results with contrastive learning. Available at `github.com/lucasPV/CCL`.
  - **2021: Weakly Supervised Experiments Framework (WSEF)**: The WSEF is a framework that employs a model based on ranked lists for unsupervised training set expansion (pseudo labeling). Available at `github.com/UDLF/WSEF`.
  - **2020: Unsupervised Selective Rank Fusion (USRF)**: The USRF is an open-source software (developed in Python), which consists of a framework for ranked lists selection and fusion, completely unsupervised. Available at `github.com/UDLF/USRF`.
  - **2016: Unsupervised Distance Learning Framework (USRF)**: An open-source framework (developed in C/C++) of unsupervised distance learning methods for image and multimedia retrieval tasks. Available at `github.com/UDLF/UDLF`.
- **Teaching Experience:**
  - **Teaching Internship in the Computer Organization classes** of the Computer Science Program (August/2018 to December/2018) at São Paulo State University (UNESP). Description: I have taught part of the classes of the Computer Organization sessions of the Computer Science BSc course.
- **Reviewer of International Conferences and Journals (Most Recent):**
  - ACM International Conference on Multimedia Retrieval (ICMR) - 2024 and 2023
  - Conference on Graphics, Patterns and Images (SIBGRAPI) - 2024 and 2023
  - Artificial Intelligence Review
  - Expert Systems with Applications
  - IEEE Transactions on Knowledge and Data Engineering
  - Information Sciences
  - Journal of Big Data
  - Journal of Intelligent Information Systems
  - Journal of Visual Communication and Image Representation
  - Knowledge and Information Systems
  - Pattern Recognition
  - Signal, Image and Video Processing
  - Springer Nature
- **Language Skills:**
  - English (Advanced), Portuguese (Native), Spanish (Basic), Japanese (Basic)