Sarah Almeida Carneiro, M.Sc.

Computer Scientist Ph.D. candidate |Research Scientist |Research Engineer
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Skills

- **Python**
- Java
- MATLAB
- C++
- C
- **Pytorch**
- TensorFlow
- Scikit-learn
- NumPy
- Neural Networks
- CNNs
- Supervised Learning
- Unsupervised Learning
- Feature engineering
- Image Processing
- Publications
- Experimental design
- Data analysis
- Critical thinking
- Logical reasoning
- Creative problem-solving

Professional Experience

Research Scientist - Deep Learning Prediction 2020 - 2024
IFP Energies Nouvelles - Ph.D. Researcher *Paris, France*

- **Developed four innovative methods** for predicting traffic speed profiles
- Leveraged neural network and deep learning strategies for mobility data reconstruction
- Worked with **real-world dataset** and integrating multiple input sources for prediction
- Enhancing company's analytical capabilities. These methods are going to be **integrated** into the company's diverse research endeavors.

Research Scientist - Multimedia Deep Learning 2017 - 2019
Semantix - M.Sc. Researcher *Campinas, Brazil*

- **Developed** deep neural network multi-stream ensembles to enhance video classification capabilities.
- **Improved accuracy in video action classification**, identifying fighting and falling actions
- Expanded company's portfolio for **safety-focused AI** product applications.

Researcher - Image Processing 2017
IMScience Lab - scholarship *BH, Brazil*

- **Elevated an image inpainting framework** with a hierarchical segmentation approach, enabling precise identification of optimal image regions for information retrieval for image filled areas.
- Resulted in winning the **university's third place** for Best Bachelor in Computer Science Research Award.

HCI Researcher 2015
Multimidia Lab SBU - Summer research Intern *NY, USA*

- Development, with a team, and HCI educational software for teaching alphabet to children
- Integrated software with hardware such as Kinect and other motion-capturing sensors.

Temporary Research and Teaching Associate 2021 - 2024
ESIEE - Temporary teaching and research fellow in French higher education *Paris, France*

- **Taught courses:**
- **IA for Images -** Taught analytical problem-solving in Image Analysis using Deep Learning, focusing on critical thinking beyond code. **Achieved 100% approval**. Deepened expertise.
- **IA & Deep learning -** Proficiently **communicated deep learning concepts** to novices, demonstrating practical applications through programming projects. Strengthened understanding.
- **3° year Project Orientation -** Initiated and **mentored group projects**. Groups achieved 95% accuracy without any previous deep learning knowledge.
- **Optimization and Introduction to IA -** Guided students in analytical problem-solving and optimization techniques, broadening insight into the subject area.
- **Optimization Algorithms -** Clarified mathematical optimization concepts, fostering deeper student engagement and understanding.

- **Algorithms -** Introduced data structures and complexity, enhancing proficiency in the subject matter.

Teaching assistant *Brazil*

- Algorithms and Computer Programming (UNICAMP) - Introduction to programming with Python
- Graph Algorithms (PUC MG) - Introduction to graph algorithms

Education

Ph.D. in Computer Science Paris, France
Université Gustave Eiffel (UGE) *2020 - 2024*

M.Sc. in Computer Science Campinas, Brazil
University of Campinas (UNICAMP) *2020*

B.Sc. in Computer Science Belo Horizonte, Brazil
PUC Minas

Publications - First Author

- **Clustering Dynamics for Improved Speed Prediction Deriving from Topographical GPS Registrations** – In: Journal Submission Under Review
- **SWMLP: Shared Weight Multilayer Perceptron for Car Trajectory Speed Prediction using Road Topographical Features** – In: Models & Technologies for Intelligent Transportation Systems (MT-ITS)
- **Multi-Stream Deep Convolutional Network Using High-Level Features Applied to Fall Detection in Video Sequences** – In: International Conference on Systems, Signals and Image Processing
- **Deep Convolutional Multi-Stream Network Detection System Applied to Fall Identification in Video Sequences** – In: 15th International Conference on Machine Learning and Data Mining (MLDM)
- **Fight Detection in Video Sequences Based on Multi-Stream Convolutional Neural Networks** – In: 32nd Conference on Graphics, Patterns and Images (SIBGRAPI)
- **Inpainting Based on Local Patch Search Supported by Image Segmentation** – In: The 23rd Iberoamerican Congress on Pattern Recognition

Other Publications

- **Graph-Based Supervoxel Computation from Iterative Spanning Forest** – Jeronimo, C. et al - In: International Conference on Discrete Geometry and Mathematical Morphology. Springer, Cham, 2021.

Ongoing Professional Development

- **Huggingface NLP Course** - Natural language processing (NLP) using libraries from the Hugging Face ecosystem - Transformers
- **Generative AI with LLMs** - Instructions from AWS AI specialists, along with practical skills and a functional understanding of how generative AI works

Event Participation

Oxford Machine Learning Summer School 2022 - Advanced AI summer school in ML x Health and ML x Finance
Oxford Machine Learning Summer School 2024 - Generative AI (Theory, Agents, Products)

Awards and Grants

- **Third place for best undergraduate thesis award** (2017)
- **CAPES undergrad Scholar for the program science without borders (CSF)**:
  1 year exchange scholarship program of the Brazilian government - Studied at Stony Brook University NY USA

Languages

Portuguese - Native; English - Fluent; French - Intermediate; Spanish - Beginner