Sarah Almeida Carneiro, M.Sc.

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

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

Summary

Ph.D. candidate in Computer Science with a Master's degree, specializing in AI and predictive networks. With 6 years of AI research and Python development experience. Passionate about exploring generative networks, and bridge theory and practice. My Ph.D. candidacy amplifies my ability to swiftly learn and deploy cutting-edge AI solutions, driving advancements as a research engineer and scientist.

Professional Experience

Temporary Research and Teaching Associate 2023 - 2024
Université Gustave Eiffel - Ph.D. Researcher *Paris, France*

- **Developed innovative methods for predicting traffic speed profiles:** Utilized Recurrent Neural Networks (RNNs) to build a speed prediction model that does not rely on historical data of a region.
- Achieved a **55% reduction in prediction error** by leveraging topographical road features such as road elevation and curvature.
- Enhanced the model's accuracy and reliability in transportation analytics, facilitating more precise speed predictions in various urban and rural settings.
- Teach AI: Improved my analytical problem-solving and communication skills through teaching Deep Learning courses, fostering critical thinking beyond coding.

Research Scientist and Developer - Deep Learning Prediction 2020 - 2023
IFP Energies Nouvelles - Ph.D. Researcher *Paris, France*

- **Developed four innovative methods for predicting traffic speed profiles:** Utilized AI methods including CNNs, GNNs, RNNs, and advanced feature engineering techniques. Achieved a **reduction of 69% in prediction error (MAE)**.
- Enhanced company's analytical capabilities. These methods are being **integrated** into the company's diverse research endeavors.

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

- **Developed deep neural network multi-stream ensembles** to enhance video classification capabilities with an **accuracy of 89%**.
- **Improved accuracy in video action classification**, identifying fighting and falling actions
- Expanded company's portfolio for **safety-focused AI** product applications.

Researcher and Developer - 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 and Developer 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.

Education

Ph.D. in Computer Science — Paris, France
Université Gustave Eiffel (UGE) — *2020 - **Oct. 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** – In: International Conference on Discrete Geometry and Mathematical Morphology. Springer

Ongoing Professional Development

- **Huggingface NLP Course** - Natural language processing (NLP) using libraries from the Hugging Face ecosystem - Transformers. **Gaining hands-on experience in implementing and fine-tuning state-of-the-art NLP models for various applications such as text classification, sentiment analysis, and language generation.**
- **Generative AI with LLMs** - Instructions from AWS AI specialists, along with practical skills and a functional understanding of how generative AI works. **Developing practical skills in creating and deploying generative models for real-world applications, including text generation, automated content creation, and conversational AI.**

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) - Won for the topic of Image Restoration
- **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