André Luiz Buarque Vieira e Silva

Computer Vision Engineer – PhD Student

Location Recife, Brazil
Phone +55 81 99901 5888
E-mail address albvs@cin.ufpe.br / andreluizbvs@gmail.com
Homepage https://andreluizbvs.github.io/

Summary

Experienced in R&D projects. My experience can be summarized in Computer Vision, Image Processing and Academic Research.

My PhD project applies deep learning-based computer vision in industrial inspection. More specifically, I apply and improve Object Detection, Image Classification and Unsupervised Anomaly Detection methods to inspect power line components in the wild (UAV imagery). I also work with anomaly detection methods for traditional controlled scenarios, such as production-line industrial object inspection.

I have experience deploying ML models into production using Cloud services (AWS). I currently work as a Compute Vision Engineer in the facial biometrics industry.

- I was responsible for managing and developing a company/university cooperation project in which I used Deep Learning methods (PyTorch, TorchScript) for defect inspection and anomaly detection in UAV images.
- The developed technology in this project, Visual Inspektor, was integrated into a product (PowerInspekt) and was deployed into production (AWS EC2) for power line inspections.
- A paper describing the developed method, AttentDifferNet, was accepted at WACV 2024.
- Two dataset papers were developed; the first paper, STN PLAD, was accepted and presented at SIBGRAPI 2021, and the second, InsPLAD, was accepted for publication in the International Journal of Remote Sensing (Impact Factor: 3.4) in 2023.
- In my master's thesis, I built a fluid simulation open-source tool (VoxarMPS) in C/C++, elevating the method to the state-of-the-art and accelerating via OpenMP and CUDA. It was published in the Computer Physics Communications journal (Impact Factor: 6.3).

Work history

Mar 2023 - present	**Computer Vision Engineer** *Caf, Venâncio Aires, Rio Grande do Sul* • Improved evaluation script for the Face Matching solution, which directly impacted and improved the overall metrics of the system • Improved Forward Compatibility Aligner for feature-embedding conversion between different models, making it viable to be used in production - *TensorFlow* • Worked on various improvements in the internal cloud orchestration tool. One of

	them displayed real-time cloud computing costs, which led to cost reductions • Experimented with state-of-the-art scientific papers from top CV conferences: AI-based image enhancement and anomaly detection applied to liveness detection • Improved the preprocessing pipeline with SotA object detection methods • Multiple code reviews and improvements
Apr 2020 - Mar 2023	**Project Leader** *Voxar Labs, Recife, Pernambuco* • Conducting academic research applied in several projects in partnership with national and multinational companies. • Leadership and management of small teams of researchers • Product Owner • Decision making
May 2016 - Mar 2023	**Research & Development Engineer** *Voxar Labs, Recife, Pernambuco* • Conducting academic research applied in several projects in partnership with national and multinational companies. • Writing scientific papers for relevant international journals • Conducting postgraduate research (masters and doctorate) • Research & Development in general
Feb 2019 - Jul 2019	**Lecturer** *Centro Universitário Maurício De Nassau (UNINASSAU), Recife, Pernambuco* • Developed materials for the Compilers and Embedded Systems classes
May 2014 - Jun 2016	**Undergraduate Research Assistant** *Voxar Labs, Recife, Pernambuco* • Contribution and assistance to research projects of national relevance • Writing scientific articles for conferences and book chapter

Education

Aug 2019 present	**PhD in Computer Science** *Centro de Informática (CIn), Universidade Federal de Pernambuco (UFPE) – Brazil* • Dissertation (not final): “Power line asset visual inspection: An end-to-end system and a benchmark”

	• Advisor: Prof. Dr. Veronica Teichrieb; Co-Advisor: Prof. Dr. Francisco Simões • Research period abroad at TU Chemnitz from June 2022 to November 2022 under the guidance of Jun.-Prof. Dr. Danny Kowerko – *Chemnitz, Germany*
Aug 2016 - Aug 2018	**MSc in Computer Science** *Centro de Informática (CIn), Universidade Federal de Pernambuco (UFPE) – Brazil* • Thesis: “A fluid simulation system based on the MPS method” • Advisor: Prof. Dr. Veronica Teichrieb
Mar 2010 - Dec 2015	**BSc in Computer Engineering** *Centro de Informática (CIn), Universidade Federal de Pernambuco (UFPE) – Brazil* • Title: “A GPU-accelerated enhanced MPS method for fluid simulation” • Advisor: Prof. Dr. Veronica Teichrieb

Accomplishments

- 4.00/4.00 GPA in PhD and MSc courses.
- Involved in multiple scientific works. See my Google Scholar profile.
- 2nd place out of 60+ candidates in the computer science PhD program selection process.

Grants & Awards

- Grant by DAAD (German Academic Exchange Service) for 6-month PhD works in TU Chemnitz, Germany. 2022.
- Student Scholarship from Softex Recife to work on a project related to Image-based Defect Inspection using Computer Vision based on Deep Learning. 2020.
- CAPES – PhD Student Scholarship. 2019.
- Scholarship from cooperation project with Hewlett-Packard Development Co. L.P. to work at Voxar Labs with Parametric 3D printing, Non-Flat AR and RL for robotics. 2016.
- CNPq Undergraduate Student Scholarship: Technological and Industrial Initiation A. 2015.

Skills

Computer Vision • Deep Learning • Anomaly Detection • Academic Research • Scientific Writing • Particle-based Fluid Simulation • Image Processing • Python • PyTorch • TorchScript • TensorFlow • OpenCV • NumPy • Docker • Flask • AWS EC2 • C++ • CUDA

Certifications

- Introduction to Machine Learning in Production – Coursera (R5NBZKBWHA4G)
- Deep Learning Specialization – Coursera (ZZHP5QWC837P)

- Generative Adversarial Networks (GANs) Specialization – Coursera (KZDVKCNHF5VK)
- DeepLearning.AI TensorFlow Developer Specialization – Coursera (ED6PAKTBSKSD)
- Python for Everybody Specialization – Coursera (776YBT7JX2YG)
- First Certificate in English – Council of Europe Level B2 (Certificate No. 0024484512)

Reviewer work

- Neural Computing and Applications (2023). Impact Factor: 6.0.
- Knowledge-Based Systems (2022). Impact Factor: 8.038.
- Computers & Graphics (2023). Impact Factor: 1.821.
- ISMAR 2020 – International Symposium on Mixed and Augmented Reality.
- Symposium on Virtual and Augmented Reality (SVR) in 2019 and 2020.