ANDRÉ LUIZ B. VIEIRA E SILVA

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Career summary

My general experience is in R&D projects with a focus on computer vision, image processing, and applied academic research. In my PhD project I develop and improve semi-supervised anomaly detection methods for industrial inspection in the wild. My current case study is the inspection of power line components from UAV imagery. I also research anomaly detection methods for controlled scenarios, such as industrial object inspection on production lines. Currently, I work as a Compute Vision Engineer in the facial biometrics industry.

Education

Universidade Federal de Penambuco   **Aug 2019 – Aug 2024 (expected)**
PhD in Computer Science   *Dissertation (not final): "Image-based industrial inspection in the wild"*

Universidade Federal de Penambuco   **Aug 2016 – Sep 2018**
MSc in Computer Science   *Thesis: "A fluid simulation system based on the MPS method"*

Universidade Federal de Penambuco   **Mar 2010 – Dec 2015**
BSc in Computer Engineering   *Final project: "A GPU-accelerated enhanced MPS method for fluid simulation"*

Experience

Caf   **Mar 2023– Present**
Computer Vision Engineer — Mid-senior level   *Venâncio Aires, Rio Grande do Sul, Brazil*

- Improved the evaluation script for the internal face matching ML model, which directly improved its overall metrics.
- Improved many aspects of the Forward Compatibility Aligner project for embedding conversion between different embedding spaces generated by different face-matching ML models. Those enabled its use in production.
- Worked on various improvements in the internal cloud computing orchestration tool. One of them displayed real-time cluster costs, which led to better usage and cost reduction.
- Experimented with SOTA scientific papers from top computer vision conferences, such as ML-based face image enhancement and anomaly detection applied to liveness detection.
- Improved the preprocessing pipeline with SOTA object detection methods.

Voxar Labs   **Apr 2021– Feb 2023**
Lead Research Engineer   *Recife, Pernambuco, Brazil*

- Lead and managed small teams of undergrad and master's researchers.
- Client communication; Decision making; Expectations management.
- Delivered a technology (Visual Inspektor) that was integrated into a operating product (PowerInspekt)

Voxar Labs   **Nov 2019– Feb 2023**
Computer Vision Research Engineer   *Recife, Pernambuco, Brazil*

- Image-based anomaly detection in image-level and pixel-level.
- Published scientific papers in industrial inspection at top-tier international journals and conferences.
- Conducted academic research applied in several partnership projects with brazilian and multinational companies.
- Contributed and assisted in multiple scientific works of national and international relevance.
- Object detection; Image classification; Semantic/instance segmentation.

UniNassau   **Feb 2019– Jul 2019**
Lecturer   *Recife, Pernambuco, Brazil*

- Developed materials for the Compilers 101 and Embedded Systems 101 courses.

Voxar Labs   **Aug 2016– Oct 2019**
Research & Development Engineer   *Recife, Pernambuco, Brazil*

- Particle-based fluid simulation Engineer.
- Research and development in several projects in partnership with national and multinational companies.
- Projects related to Fluid Simulation, AR/VR, Parametric 3D printing and Robotics.
- Development of scientific papers for relevant international journals.

Voxar Labs   **May 2014– Jul 2016**
Undergraduate Student Researcher   *Recife, Pernambuco, Brazil*

- Contribution and assistance to research projects of national relevance.
- Development of scientific articles for conferences and a book chapter.

Internships

Technische Universität Chemnitz   **Oct 2022– Mar 2023**
Research Assistant   *Chemnitz, Saxony, Germany*

- Research period abroad part of my PhD studies under the guidance of Jun.-Prof. Dr. Danny Kowerko.
- Main focus: Image-based semi-supervised anomaly detection applied to industrial inspection in multiple domains, such as power line components and semiconductor wafers.
- Culminated in an extended abstract accepted at the VISION workshop at CVPR 2023 and a paper accepted at WACV 2024 main conference.

Achievements

- Involved in multiple scientific conference and journal papers in venues such as WACV, CVPRW, the International Journal of Remote Sensing, and Computer Physics Communications, with a total of 90+ citations. For the full list, please see my Google Scholar profile.
- All A's in PhD and MSc courses and 2nd place out of 60+ candidates in the computer science PhD program selection.
- Developed Visual Inspektor (registered at INPI, the brazilian institute of industrial property). It was integrated into a product, PowerInspekt, and was deployed into production for power line inspections.

Grants & Awards

- Research grant by the DAAD (German Academic Exchange Service) for a 6-month period to develop my PhD studies at TU Chemnitz, Germany, from Jun 2022 to Dec 2022. DAAD program name: "Co-financed Short-Term Research Grant Brazil, 2022 (ID: 57594818)".
- PhD Student Scholarship from CAPES – "Coordination of Superior Level Staff Improvement", a Brazilian government agency. 2019-2023.
- 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. 2016-2019.
- Student Scholarship from Softex Recife to work on a project related to Image-based Defect Inspection using Computer Vision based on Deep Learning. 2020.

Notable Github Projects

InsPLAD	—	PLAD	—	public-insulator-datasets	—	VoxarMPS

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.

Skills

- **Programming**: Python (main), C, CUDA.
- **Frameworks & Libs**: PyTorch, TensorFlow, OpenCV, Pandas, NumPy, Scikit-Learn, Matplotlib, TorchScript.
- **Tools**: Git, Docker, AWS, Flask, ONNX.

Certificates

- Deep Learning Specialization – Coursera (ZZHP5QWC837P).
- Generative Adversarial Networks (GANs) Specialization – Coursera (KZDVKCNHF5VK).
- Introduction to Machine Learning in Production – Coursera (R5NBZKBWHA4G).
- 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).