Bruno Scholles Soares Dias

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GitHub LinkedIn

Profile

4 years of combined experience in both academic research and real-world applications in the fields of Artificial Intelligence and Computer Vision. Known for effectively managing multidisciplinary projects and serving as a bridge between teams from diverse fields.

Experience

INESC TEC — Oct/2024 – Now
Research Assistant — *Portugal (Hybrid)*

- Computer vision for field robotics at TRIBE Lab, building autonomous systems for fruit tree monitoring and pruning.
- Real-time perception using YOLOv11, Faster/Mask R-CNN, RT-DETR, and Mask2Former.
- Developed color parameterization methods (ML + color metrics), dataset prep, and feature extraction.

Associação GigaCandanga — Mar/2023 – Now
AI Engineer — *Brazil (Hybrid)*

- Lead researcher: mentored Data Science newcomers on the team, set roadmaps, established workflows, and managed code reviews.
- Fine-tuned SLMs/LLMs (e.g., MedGemma - Google) with LoRA/PEFT/Transformers for multimodal medical tasks (preprocessing, prompting, deployment).
- Developed DL models (EfficientNet, 3D-CNN, FastViT, UNet) for dental CV applications (e.g., osteoporosis, atheromas).
- Created models that outperformed general dentists and nearly matched specialist radiologist performance.
- Performed data engineering and radiomic extraction from PR/CT scans (Python, 3D Slicer) for ML analysis.

Polícia Civil do Distrito Federal — Feb/2024 – Jun/2024
Computer Vision Volunteer — *Brazil (Remote)*

- Applied AI with 59 deep learning models for forensic image classification of gunshot wound patterns.
- Analyzed forensic wound images to support predictive modeling with annotated legal datasets.

Brazilian Ministry of Defense - CENSIPAM — Set/2021 – Dec/2023
R&D Data Scientist — *Brazil (Hybrid)*

- Develop AI/ML models (Random Forest, MLP) for fire classification in the Legal Amazon using multispectral satellite imagery.
- Use QGIS, Google Earth Engine, PySpark, AWS, and MySQL for data engineering and maintenance of geospatial databases.
- Analyze RGB and SAR images, integrating geospatial data (shapefiles) from public sources.

UnB Internet of Things — Feb/2021 – Aug/2023
Research Assistant — *Brazil (Hybrid)*

- Develop computer vision algorithms for monitoring and manage IoT devices using edge and fog computing.
- Build ML systems using mobile data to predict the physical location of users with classical ML models.

TELEBRAS S.A. — Sep/2020 – Feb/2022
Engineering Intern — *Brazil (Hybrid)*

- Support physical/logical installation projects through documentation review and equipment migration.
- Maintain and update engineering systems databases, with a focus on fiber optic networks and team-based operations.

Universities Attended

Joint degree with University of Porto (Portugal), and UDC, USC, UVigo (Spain) — Portugal
Master in Computer Vision

University of Brasília (UnB) — Brazil
Bachelor in Network and Communications Engineering

Technical Abilities

Main Stack: Python (PyTorch, Transformers, Keras, TensorFlow, Scikit-learn, OpenCV, Flask, FastAPI, Scikit-video, Pandas, GeoPandas, Rasterio, Shapely, PyShp), Image Processing, Artificial Intelligence, Deep Learning, Generative AI, Small Language Models (SLMs), Large Language Models (LLMs), Fine-tuning, AI Agent, Machine Learning, Docker, SQL, MySQL
Others: Spark, AWS, 3D Slicer, Google Earth Engine, QGIS, Kubernetes, Microsoft Office, Programming in C, C++, and MatLab

Languages

Portuguese: Native **English:** Fluent **Spanish:** Basic

Major Academic Publications

- Dias, B. S. S., Peixoto, R. Q., Leite, A. F., Melo, N. S., Caetano, M. F., & Farias, M. C. Q. (2024). Osteoporosis screening: Leveraging EfficientNet with complete and cropped facial panoramic radiography imaging. *Biomedical Signal Processing and Control*, 85, 104964. https://doi.org/10.1016/j.bspc.2023.104964
- Lira, R.Q.N., de Sousa, L.G.M., Pinho, M.L.M., de Lima, R.C.P.S.A., Freitas, P.G., Dias, B.S.S., de Souza, A.C.B., & Leite, A.F. (2024). Deep learning-based human gunshot wounds classification. *International Journal of Legal Medicine*. https://doi.org/10.1007/s00414-024-03355-4
- Mastralexi, C., Dias, B. S. S., Coelho, C., & Carvalho, P. (2025). CIEDE2000-based Wine Color Analysis Using Smartphones in Unconstrained Environments. In: *2025 6th International Conference in Electronic Engineering & Information Technology (EEITE)*, Chania, Greece, pp. 1–6. https://doi.org/10.1109/EEITE65381.2025.11166185
- Dias, Bruno Scholles Soares. Tipificação de incêndios florestais na Amazônia Legal através de aprendizado de máquina. 2023. 73 f., il. Trabalho de conclusão de curso (Bacharelado em Engenharia de Redes de Comunicação) — Universidade de Brasília, Brasília, 2023.
- Saigg, C. L., Dias, B. S. S., Costa, A. H. M., Farias, M. C. Q., & Martinez, H. B. (2022). A Python Framework for Objective Visual Quality Assessment. In: *Conference on Graphics, Patterns and Images (SIBGRAPI), 35.*, 2022, Natal/RN. Porto Alegre: Sociedade Brasileira de Computação, pp. 105-109. https://doi.org/10.5753/sibgrapi.est.2022.23271
- Dias, B. S. S., Ferreira, M. V. S., Caldas Filho, F. L., Mendonça, F. L. L., Canedo, E. D., Albuquerque, R. O., & Sousa Júnior, R. T. (2023). Utilização de técnicas de aprendizagem de máquina para otimização de aplicativos de segurança em redes IoT. In: *Proceedings of the Ibero American on WWW/Internet*, Madeira Island, Portugal, 21–23 October. https://doi.org/10.33965/CIACA_CIAWI2023_202308L003
- Dias, B. S. S.; Mello, I. P. E.; Caldas Filho, F. L.; Mata, R. Z. A.; Almeida, L. O.; Mendonça, F. L. L.; Sousa Jr, R. T. (2022). Sistema para a identificação de aglomerações operando em Redes IoT e Fog Computing. *RISTI (Porto, Portugal)*, v. 47, p. 300-311. ISSN: 1646-9895.
- Dias, Bruno S. S.; Mello, I. P. E.; Caldas Filho, F. L.; Mendonça, F. L. L.; Sousa Junior, R. T. (2021). Sistema Monitor de Aglomerações Baseado em Reconhecimento de Padrões e Cálculos de Distanciamento Social Operante em Rede IoT Estruturada em Fog Computing. In: *Conferências IberoAmericanas: WWW/Internet 2021 e Computação Aplicada 2021*, Lisboa, Portugal. https://doi.org/10.33965/ciawi_ciaca2021_2021101017