LEO THOMAS RAMOS

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RESEARCH IMPACT

Citations: 1100

H-index: 15

i10-index: 20

Publications: 24 journal articles (18 Q1, 3 Q2), 15+ international conference papers.

ABOUT ME

PhD student and researcher in computer vision and deep learning. Research interests include remote sensing, Earth observation, space exploration, planetary science, multimodal and multispectral data analysis, and medical imaging. Experience in collaborating with multidisciplinary teams across Europe, the Middle East, Asia, and the Americas, including researchers and experts from Dubai Police, the Environment Agency Abu Dhabi, Halliburton, Saudi Aramco, Honeywell, the Air Force Research Laboratory, and NASA Jet Propulsion Laboratory.

EDUCATION

PhD in Computer Science *Dec 2023 - Present*
Computer Vision Center, Universitat Autònoma de Barcelona, Spain
Advisor: Ángel D. Sappa, PhD

Information Technology Engineering *Jan 2018 - Jun 2023*
Yachay Tech University, Ecuador
Thesis grade: **10/10**
Major GPA (artificial intelligence specialization): **3.84/4.0**
Cumulative GPA (general core + major specialization): **3.76/4.0**
Honours: **Magna Cum Laude**

EXPERIENCE

Research Collaborator (Remote) *Apr 2026 - Present*
Fairfield University, USA
· Preparation and pre-processing of multimodal orbital imagery.
· Development of computer vision methods for multimodal landslide detection.
· Elaboration of peer-reviewed scientific publications.
Supervisor: Sidike Paheding, PhD

Research Engineer (Part-time, Remote) *Sep 2023 - Present*
Kauel Inc., Silicon Valley, USA
· Develop and deploy computer vision algorithms for industrial and energy sector applications.
· Lead research-driven projects, coordinating multidisciplinary teams to meet technical objectives.
· Contribute to peer-reviewed scientific publications bridging applied research and real-world systems.

Research Associate (Remote) *Jan 2025 - Dec 2025*
The University of Texas at Arlington, Texas, USA
· Co-supervise undergraduate and master's students in scientific research.
· Provide guidance on research methodology, academic writing, and publication strategy.
Supervisor: Francklin Rivas-Echeverría, PhD

Trainee Engineer (Remote) *Mar 2023 - Aug 2023*
Kauel Inc., Silicon Valley, USA
· Conducted research and development of computer vision systems for early wildfire detection.
· Designed and optimized algorithms, collected datasets, trained models.
Supervisor: Edmundo Casas, CEO, Kauel

Research Assistant *Jan 2023 - Mar 2023*
Yachay Tech University, Ecuador
Research assistant for the projects:

- The Role of Artificial Intelligence in Fashion Companies to Achieve Sustainability.
- Deep Reinforcement Learning with Microcircuits in Clever Game Playing.
- Artificial Intelligence for the Diagnosis, Treatment, and Prevention of Sleep Apnea.
- Online vs. Offline Computing: Comparison, Applications and Use-cases.

· Conducted comprehensive literature reviews, synthesized findings, benchmarked performance, developed computational models, and co-authored research
Supervisors: Francklin Rivas-Echeverría, PhD and Eugenio Morocho, PhD

Research Intern (Remote) *Feb 2022 - Sep 2022*
TALOV Inc., Newark, Delaware, USA
· Developed neural network models to support assistive technologies for people with disabilities.
· Conducted research on computer vision and natural language processing techniques.
· Built models for translating sign language into spoken language.
Supervisor: Hugo Jácome-Andrade, CEO, TALOV

GRANTS AND FUNDED PROJECTS

Research Grants

IEEE Computational Intelligence Society Graduate Student Research Grant
Funding organization: IEEE Computational Intelligence Society (CIS)
Grant period: 2026
Role: PhD Researcher
Selection: International call with an 18% success rate

"Teresa Mañé" PhD Mobility and Training Grant
Funding organization: Computer Vision Center, Universitat Autònoma de Barcelona, Spain
Grant period: Mar 2026 - PhD completion
Role: PhD Researcher
Selection: One of only two grants awarded among all applicants

Research Projects

Scene-aware Processing and Integration for Digital Environment Representations (SPIDER)

Funding organization: Ministry of Science and Innovation, Spain
Grant #: PID2024-162815NB-I00
Grant period: Sep 2025 - Sep 2028
Role: PhD Researcher

Advancing Camouflaged Object Detection with a Cost-Effective Cross-Spectral Vision System (ACOD-CS)
Funding organization: Air Force Office of Scientific Research (AFOSR), USA
Grant #: FA9550-24-1-0206
Grant period: Jul 2024 - Jul 2028
Role: PhD Researcher

CONFERENCE AND WORKSHOP ORGANIZATION

22nd IEEE/CVF Beyond the Visible Spectrum (PBVS) Workshop @ CVPR 2026
· Organizing committee member
· Challenge co-chair
· Organizer of competition challenges:

- 1st Mars Landslide Segmentation (MARS-LS) Challenge
- 1st Hyperspectral Image Super-Resolution (HISR) Challenge
- 2nd Thermal Pedestrian Multiple Object Tracking (TP-MOT) Challenge
- 4th Multi-modal Aerial View Imagery Challenge: Translation (MAVIC-T)
- 5th Multi-modal Aerial View Imagery Challenge: Classification (MAVIC-C)
- 7th Thermal Image Super-Resolution (TISR) Challenge

ACHIEVEMENTS, HONOURS AND AWARDS

Research Excellence Recognition *2026*
Computer Vision Center, Universitat Autònoma de Barcelona, Spain
Awarded for the highest number of high-impact publications within the MSIAU Research Group in 2025

Research Excellence Recognition *2025*
Kauel Inc., Silicon Valley, USA
Awarded for high-impact research contributions and scientific dissemination

Research Excellence Recognition *2025*
Computer Vision Center, Universitat Autònoma de Barcelona, Spain
Awarded for the highest number of high-impact publications within the MSIAU Research Group in 2024

Research Excellence Recognition *2025*
Yachay Tech University, Ecuador
Awarded to the alumnus with the highest number of high-impact scientific publications.

Undergraduate Scholarship *2019 - 2023*
Yachay Tech University, Ecuador
Scholarship granted for seven consecutive terms based on semester-by-semester academic excellence

PEER REVIEW

Conferences

· IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) *2026*
· IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) *2025*
· Conference on Neural Information Processing Systems (NeurIPS) *2024*

Journals

· IEEE Transactions on Geoscience and Remote Sensing *2026 - Present*
· ISPRS Journal of Photogrammetry and Remote Sensing *2026 - Present*
· IEEE Open Journal of the Computer Society *2025 - Present*
· Pattern Recognition *2024 - Present*
· Pattern Recognition Letters *2024 - Present*
· Medical Image Analysis *2024 - Present*
· Neurocomputing *2024 - Present*
· Engineering Applications of Artificial Intelligence *2024 - Present*
· Computers and Electronics in Agriculture *2024 - Present*
· Computerized Medical Imaging and Graphics *2024 - Present*
· IEEE Transactions on Systems, Man, and Cybernetics: Systems *2024 - Present*

TECHNICAL SKILLS

Programming & Scripting: Python

Artificial Intelligence: PyTorch, TensorFlow, Hugging Face, Scikit-Learn, OpenCV, NumPy, Matplotlib, High-performance computing

Version Control & Dev Tools: GitHub, Visual Studio Code, Google Colab

Scientific Writing: LaTeX, Overleaf

Operating Systems: Windows, Linux

LANGUAGES

Spanish: Native
English: Advanced
Italian: Elementary
Catalan: Beginner

PROFESSIONAL MEMBERSHIPS

IEEE Computer Society
IEEE Geoscience and Remote Sensing Society
IEEE Computational Intelligence Society
IEEE Engineering in Medicine and Biology Society
IEEE Industry Applications Society
IEEE Young Professionals

PUBLICATIONS

Journals

Ramos L. T., Sappa A. D. (2026). Accelerating vision transformers for remote sensing image classification via redundancy-aware token merging. *Under review.*

Román J., Ramos L. T., Al Ketbi A., Al Dhaheri S., Rivas-Echeverría F. (2026). Deep learning for environmental monitoring and conservation: Applications, approaches, challenges, and future perspectives. *Under review*. Available at: https://doi.org/10.36227/techrxiv.176463786.63610597/v1

Ramos L. T., Sappa, A. D. (2026). Multi-encoder ConvNeXt network with smooth attentional feature fusion for multispectral semantic segmentation. *Neurocomputing*, 685, 133533. https://doi.org/10.1016/j.neucom.2026.133533

Ramos L. T., Sappa, A. D. (2025). A decade of You Only Look Once (YOLO) for object detection: A review. *IEEE Access*, 15, 26890. https://doi.org/10.1109/ACCESS.2025.3630988

Ramos L. T., Sappa, A. D. (2025). Leveraging U-Net and selective feature extraction for land cover classification using remote sensing imagery. *Scientific Reports*, 15, 784. https://doi.org/10.1038/s41598-024-84795-1

Ramos L. T., Sappa A. D. (2025). A comprehensive analysis of YOLO architectures for tomato leaf disease identification. *Scientific Reports*, 15, 26890. https://doi.org/10.1038/s41598-025-11064-0

Ramos L. T., Rivas-Echeverría F. (2025). Deep sky object detection in astronomical imagery using YOLO models: A comparative assessment. *Neural Computing and Applications*, 1–23. https://doi.org/10.1007/s00521-025-11223-4

Ramos L. T., Casas E., Romero C., Rivas-Echeverría F., Bendek E. (2025). A study of YOLO architectures for wildfire and smoke detection in ground and aerial imagery. *Results in Engineering*, 26, 104869. https://doi.org/10.1016/j.rineng.2025.104869

Ramos L. T., Casas E., Rivas-Echeverría F. (2025). Synthetic generated data for intelligent corrosion classification in oil and gas pipelines. *Intelligent Systems with Applications*, 25, 200463. https://doi.org/10.1016/j.iswa.2024.200463

Casas E., Ramos L. T., Romero C., Rivas-Echeverría F. (2025). A review of computer vision applications for asset inspection in the oil and gas industry. *Journal of Pipeline Science and Engineering*, 3, 1–24. https://doi.org/10.1016/j.jpse.2024.100246

Ramos L. T., Sappa A. D. (2024). Multispectral semantic segmentation for land cover classification: An overview. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, 17, 14295–14336. https://doi.org/10.1109/JSTARS.2024.3438620

Ramos L. T., Casas E., Bendek E., Romero C., Rivas-Echeverría F. (2024). Hyperparameter optimization of YOLOv8 for smoke and wildfire detection: Implications for agricultural and environmental safety. *Artificial Intelligence in Agriculture*, 12, 109–126. https://doi.org/10.1016/j.aiia.2024.05.003

Casas E., Ramos L. T., Romero C., Rivas-Echeverría F., Cerpa, D., Hernández, P., Orellana, G., Ibarra, J. L., Rosas Albrecht, C., Cuevas, N. (2024). An end-to-end platform for managing third-party risks in oil pipelines. *IEEE Access*, 12, 77831–77851. https://doi.org/10.1109/ACCESS.2024.3406604

Ramos L. T., Casas E., Bendek E., Romero C., Rivas-Echeverría, F. (2024). Computer vision for wildfire detection: A critical brief review. *Multimedia Tools and Applications*, 83, 83427–83470. https://doi.org/10.1007/s11042-024-18685-z

Ramos L. T., Casas E., Romero C., Rivas-Echeverría F., Morocho-Caymacela, M. E. (2024). A

study of ConvNeXt architectures for enhanced image captioning. *IEEE Access*, 12, 13711–13728. https://doi.org/10.1109/ACCESS.2024.3356551

Casas E., Ramos L. T., Bendek E., Rivas-Echeverría F. (2023). Assessing the effectiveness of YOLO architectures for smoke and wildfire detection. *IEEE Access*, 11, 96554–96583. https://doi.org/10.1109/ACCESS.2023.3312217

Ramos, L. T., Rivas-Echeverría, F., Pérez, A., Casas, E. (2023). Artificial intelligence and sustainability in the fashion industry: A review from 2010 to 2022. *SN Applied Sciences*, 5, 1–21. https://doi.org/10.1007/s42452-023-05587-2

Conferences

Ramos L. T., Sappa A. D. (2026). StrokeNeXt: A Siamese-encoder Approach for Brain Stroke Classification in Computed Tomography Imagery. *Under review*. Available at: https://arxiv.org/abs/2602.15087

Ramos L. T., Sappa A. D. (2026). A Parameter-efficient Convolutional Approach for Camouflaged Weed Detection in Multispectral Aerial Imagery. *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) Workshops*, Denver, USA, pp. 1349–1358.

Suárez P., Ramos L. T., Sappa A. D. (2026). Bi-CamoDiffusion: A Boundary-informed Diffusion Approach for Camouflaged Object Detection. *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) Workshops*, Denver, USA, pp. 1401–1410.

Paheding S., Reyes-Angulo A., Ramos L. T., Sappa A. D., Rajaneesh, A., B., H. P., Kumar K. S., S., Oommen, T. (2026). MMLSv2: A Multimodal Dataset for Martian Landslide Detection in Remote Sensing Imagery. *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) Workshops*, Denver, USA, pp. 10329–10338.

Ramos L. T., Reyes-Angulo A., Paheding S., Sappa A. D. (2026). 1st Mars Landslide Segmentation Challenge - PBVS 2026. *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) Workshops*, Denver, USA, pp. 7132–7141.

Ramos L. T., Wheelwright J., Nina O., Sappa A. D. (2026). 5th Multi-modal Aerial View Imagery Challenge: Classification - PBVS 2026. *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) Workshops*, Denver, USA, pp. 7152–7160.

Ramos L. T., Wheelwright J., Nina O., Sappa A. D. (2026). 4th Multi-modal Aerial View Imagery Challenge: Translation - PBVS 2026. *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) Workshops*, Denver, USA, pp. 7142–7151.

De Kerf T., Rivadeneira R. E., Ramos L. T., Sappa A. D., Vanlanduit S., (2026). 1st Hyperspectral Image Super-Resolution Challenge - PBVS 2026. *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) Workshops*, Denver, USA, pp. 7067–7073.

El Ahmar W., Ramos L. T., Sappa A. D., Hammoud R. (2026). 2nd Thermal Pedestrian Multiple Object Tracking Challenge - PBVS 2026. *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) Workshops*, Denver, USA, pp 7074–7081.

Rivadeneira R. E., Sappa A. D., Ramos L. T., Hammoud R., Wu S., Zhong H., Wang Y., Zhao S., Fan

D., Li Z., Tang X. (2026). 7th Thermal Image Super-Resolution Challenge - PBVS 2026. *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) Workshops*, Denver, USA, pp. 7171–7180.

Ramos L. T., Sappa A. D. (2026). Exploring Diffusion-generated Guidance for Thermal Image Super-resolution. *IEEE/CVF Winter Conference on Applications of Computer Vision (WACV) Workshops*, Tucson, USA, pp. 105–114.

Ramos L. T., Casas E., Romero C., Rivas-Echeverría F. (2026). K-Vehicles: A Remote Sensing Dataset for Vehicle Detection in Aerial Imagery. *IEEE/CVF Winter Conference on Applications of Computer Vision (WACV) Workshops*, Tucson, USA, pp. 800–809.

Velesaca H. O., Ramos L. T., Sappa A. D. (2026). CARLA-Haze: A Synthetic Benchmark for Outdoor Image Dehazing. *IEEE/CVF Winter Conference on Applications of Computer Vision (WACV) Workshops*, Tucson, USA, pp. 1164–1173.

Ramos L. T., Sappa A. D. (2025). Dual-Branch ConvNeXt-Based Network with Attentional Fusion Decoding for Land Cover Classification Using Multispectral Imagery. *IEEE SoutheastCon*, Concord, North Carolina, USA, pp. 187–194. https://doi.org/10.1109/SoutheastCon56624.2025.10971457

Ramos L. T., Casas E., Romero C., Rivas-Echeverría F., Cerpa D., Hernández P., Orellana G., Ibarra J. L., Rosas Albrecht C., Cuevas N., Gallardo Hurtado J. C. (2024). Development of a wildfire detection and monitoring solution using computer vision. *IEEE International Forum on Research and Technologies for Society and Industry (RTSI)*, Milano, Italy, pp. 613–618.
https://doi.org/10.1109/RTSI61910.2024.10761772

Saputelli, L., Duran, J., Rivas, F., Casas, E., Ramos, L. T., Bravo, C., Chacon, A., Temizel, C., Mubarak, S., Chacon, J., Escorcia, A., Elred, M., Diaz, S., Yrigoyen, A., Moricca, G., Querales, M., Lopez, C. (2024). Success cases and lessons learned after 20 years of oilfield digitalization efforts. *SPE Annual Technical Conference and Exhibition (ATCE)*, New Orleans, Louisiana, USA, pp. 1–47. https://doi.org/10.2118/220932-MS