



# Leandro Di Bella

PERCEPTION & ROBOTICS ENGINEER | PHYSICAL AI FOR AUTONOMOUS SYSTEMS

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“Deployable autonomous perception with temporal consistency and robustness under distribution shift.”

## Summary

PhD candidate looking for a full-time opportunity. Specialized in robotics, physical AI, and computer vision for autonomous systems, with expertise in perception, detection, multi-object tracking, and vision-language models (VLMs). Currently technical lead on drone localization and navigation in a European Defence Fund (EDF) research project, and working on multi-agent motion forecasting using flow-based generative AI. Experienced in deploying real-time perception on embedded platforms (Jetson, TensorRT, C++).

## Experience

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|--------------------------------------------------------------------------------------------------------------------|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>IMEC &amp; VUB (ORIGAMI, European Defence Fund project)</b><br>TECHNICAL LEAD, ROBOTICS & PERCEPTION RESEARCHER | Jan. 2026 – Present<br>Brussels, Belgium   | Technical lead for drone autonomy: architected and integrated the full drone platform (hardware, sensing, and autonomy software). Sensor fusion and localization in 3D environments; developing world-model-based methods for autonomous navigation. |
| <b>MACQ Mobility (research project)</b><br>COMPUTER VISION RESEARCHER                                              | Jan. 2023 – Jan. 2026<br>Brussels, Belgium | Detection, 3D multi-object tracking, scene understanding, and motion forecasting for autonomous vehicles using generative AI. Achieved #1 on the KITTI MOT and Waymo motion forecasting benchmarks.                                                  |
| <b>Mappx</b><br>FOUNDER                                                                                            | Aug. 2025 – Present<br>Brussels, Belgium   | Built a map-centric social travel app (Flutter) with FastAPI backend and PostgreSQL.                                                                                                                                                                 |
| <b>MACQ Mobility</b><br>COMPUTER VISION INTERN                                                                     | Aug. 2022 – Oct. 2022<br>Brussels, Belgium | Developed and integrated instance segmentation on NVIDIA Jetson TX2 (Python/C++).                                                                                                                                                                    |
| <b>Vrije Universiteit Brussel</b><br>TEACHING ASSISTANT                                                            | 2022 – 2025<br>Brussels, Belgium           | Teaching assistant for Machine Learning and Big Data Processing (2.5 years).                                                                                                                                                                         |

## Education

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| <b>ETRO, Vrije Universiteit Brussel (VUB)</b><br>PhD in Engineering Sciences (AI, Computer Vision & Robotics)                           | Brussels, Belgium<br>2023 – Present |
| <b>ICVSS 2026 (International Computer Vision Summer School)</b><br>Summer school: Computer Vision for Spatial and Physical Intelligence | Sicily, Italy<br>2026               |
| <b>Solvay Brussels School</b><br>Advanced Master in Industrial & Technological Management                                               | Brussels, Belgium<br>2025 – Present |
| <b>Bruface (ULB/VUB)</b><br>M.Sc. Electrical Engineering (Information Technology Systems)                                               | Brussels, Belgium<br>2020 – 2023    |

## Selected publications

|                                                                                                                                                                                                                                          |                                                                                                                                                                 |
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| <b>HybridTrack: A Hybrid Approach for Robust Multi-Object Tracking</b><br>L. Di Bella, Y. Lyu, B. Cornelis, A. Munteanu<br>IEEE Robotics and Automation Letters (RA-L) / ICRA (2025). Ranked #1 on the KITTI MOT benchmark.              | <b>ReferGPT: Towards Zero-Shot Referring Multi-Object Tracking</b><br>T. Chamiti, L. Di Bella, A. Munteanu, N. Deligiannis<br>CVPR Workshops (2025)             |
| <b>FlowS: One-Step Motion Prediction via Local Transport Conditioning</b><br>L. Di Bella, A. Munteanu, B. Cornelis<br>IEEE Robotics and Automation Letters (RA-L), accepted (2026). Ranked #1 on the Waymo motion forecasting benchmark. | <b>Spectral-Aware Multi-Object Tracking in Harsh Aerial Perception Domains</b><br>L. Di Bella, J. Mimassi, L. Denis, A. Munteanu<br>IEEE ICRA 2026 Workshop S2S |

## Research interests

Perception for autonomous systems, world models for perception and navigation, localization in 3D environments, vision-language-action (VLA) models for robotics.

## Skills

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|------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| <b>Programming</b>                 | Python, C++, CUDA, PyTorch, TensorRT, ONNX, FastAPI, Flutter/Dart                                                  |
| <b>ML / Perception</b>             | Detection, instance segmentation, monocular 3D, 2D/3D tracking (MOT), SLAM, Kalman filtering, temporal consistency |
| <b>Vision-language &amp; GenAI</b> | Grounding / referring tracking, multimodal reasoning, generative motion forecasting                                |
| <b>Robotics</b>                    | ROS 2, SLAM, localization, motion planning, navigation, sensor fusion                                              |
| <b>Systems / Deployment</b>        | Jetson, Docker, GitHub CI/CD, Azure cloud services, Firebase, PostgreSQL                                           |
| <b>Academic service</b>            | Reviewer: TIP, RA-L, ICRA, ICIP, IET                                                                               |