

German Ros ^{PhD}

Physical AI Research | Platforms & Infrastructure

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Bay Area, CA and Madrid, Spain | Dual citizenship: United States and Spain

PROFILE

Pioneer in modern Physical AI through foundational work on SYNTHIA and CARLA, advancing synthetic data and simulation for autonomous systems. I lead global research and engineering efforts to create the next generation of Physical AI platforms, workflows, and infrastructure for training and validating intelligent systems in the real world. My work connects research to products, scaling synthetic data generation and simulation to enable increasingly capable and safe autonomous systems. A strong open-source advocate, I build communities and ecosystems that accelerate innovation and support sustainable commercial adoption.

WORK EXPERIENCE

2025–Present **Principal Scientist, Physical AI Research** | NVIDIA Santa Clara, CA

- Leading global Physical AI research efforts, developing next-generation workflows to train and validate intelligent systems for deployment in the physical world.
- Scaling synthetic data generation and simulation to train policies that aim to surpass human performance in real-world tasks, with safety central to their development and validation.

2023–Present **Director, Simulation Ecosystem Development** | NVIDIA Santa Clara, CA

- Creating new products, workflows, and infrastructure for Physical AI, enabling the development, training, and validation of autonomous systems.
- Leading the CARLA organization, delivering Physical AI workflows and infrastructure to partners, customers, and the research community.

2021–2023 **Director, Autonomous Agents Lab** | Intel Labs Santa Clara, CA

- Managing an international and distributed AI research lab focused on creating new research results and transferring them to production. Space: Simulation for Autonomous Driving, Simulation for Robotics, 3D AI, generative AI, Digital Twins, and Sim-to-Real.
- Leading research collaborations with academia and industry partners.
- Creating new corporate channels to build brand-new products and services from research results.
- Leading the creation of new products in the spaces of AI, 3D Content Creation, and Simulation platforms with an estimated revenue of +200 M USD.
- Leading the R&D strategy for Generative AI, 3D Content Creation, and Digital Twins solutions.
- Mentoring of researchers and engineers on career progression and growth (+5 promotions in the last 2 years).

2021–2023 **Principal Investigator, DARPA RACER-SIM** | Intel Labs Santa Clara, CA

- Managing an international consortium (Intel, The University of Texas at Austin, Computer Vision Center,) with +30 headcounts to create the next generation of simulation solutions for high-speed off-road Physical AI for the US Department of Defense.
- Leading the technical development of new real-time terramechanics simulation algorithms using machine learning.
- Leading the technical development of new Digital Twins solutions for large off-road environments.

2020–Present **Co-founder and Board Director** | Embodied AI Foundation

- Enabling transformative Embodied AI and Physical AI technologies through a non-profit dedicated to open-source development of software, hardware, and educational curricula.
- Driving customer success in Physical AI for Caterpillar, NASA, Toyota, DARPA, Northrop Grumman, General Motors, Siemens, and Supernal.

WORK EXPERIENCE (CONTINUED)

2018–2021 **Sr. Staff Scientist** | Intel Labs Santa Clara, CA

- Served as the program lead for 3D Vision, driving research and technology transfer of novel solutions in the space of 3D Scene Understanding and 3D Reconstruction.
- Served as the program lead for Simulation for Autonomous Systems, creating new solutions to accelerate and standardize the training and validation of autonomous systems. Helped 7+ industry partners to solve problems in the space of Autonomous Systems through simulation.
- Managed an international and distributed team to create new simulation solutions to enable the training and validation of autonomous driving systems for General Motors.
- Drove the creation of large communities around open-source projects such as CARLA (from 0 to +200K users) and Open3D (from 100 to +150K users). CARLA is now considered the top-1 autonomous driving simulator, widely used in academia, industry, and government institutions (e.g., DOT, DOE, DOD). Open3D was designated by the Python community as a critical project (top 1% project in downloads over 6 months).
- Developed new AI-powered techniques in the space of sensor simulation, physics simulation, and Sim-to-Real.

2018–2020 **Co-founder, OSVF.org: Open Source Vision Foundation** | OSVF.org Palo Alto

- Created a non-profit organization to drive the growth of open-source projects in the space of AI, Computer Vision, and Simulation.
- Raised +3M USD in funding over 2 years through sponsorships and contracts.
- Grew a team of +20 engineers to develop new solutions based on open-source projects (e.g., CARLA).

2017–2018 **Research Scientist** | Toyota Research Institute Los Altos, CA

- Carried out research in computer vision for Autonomous Driving and Sim-to-Real technologies.
- Created and managed the sensor simulation team, providing new simulation tools for the evaluation of autonomous driving systems end-to-end.
- Served as the coordinator of research collaborations with the University of Michigan.

2015 **R&D Contractor** | Yandex Remote

- Developed new algorithms for change detection using deep learning techniques and synthetic data.

EDUCATION

2011–2016 **PhD in Computer Vision (Cum Laude)**

Universitat Autònoma de Barcelona, CVC | Spain

2011–2012 **MSc in Computer Vision and Artificial Intelligence**

Universitat Autònoma de Barcelona | Spain

2010–2011 **MSc in Computer Vision and Image Analysis**

Kingston University of London | UK | *1st class*

2005–2010 **BSc in Computer Science (Hons., Cum Laude)**

University of Murcia | Spain | *1st class*

SKILLS

Leadership	R&D Strategy, Team Leadership, Applied Research, Technology Transfer, and Product Development.
Physical AI	Physical AI Infrastructure, World Models, Causal Reasoning, Simulation for Autonomous Systems, and Sim-to-Real.
Technology	Machine Learning, 3D Computer Vision, Game Engines, and Rendering.

LANGUAGES

Spanish: Native; **English:** Proficient user; **Catalan:** Basic user; **Japanese:** Basic user

PATENTS

- 2026 Robot simulator with efficient contact wrench estimation (US 12,697,725 B2)
- 2022 Inferring locations of 3D objects in a spatial environment (US 11,276,230 B2)
- 2021 System and method for system-aware classifiers (US 11,055,576 B2)
- 2020 Systems and methods for conditional image translation (US 10,824,909 B2)
- 2020 Virtually boosted training (US 10,817,752 B2)
- 2020 Inferring locations of 3D objects in a spatial environment (US 10,810,792 B2)
- 2020 System and method for generating improved synthetic images (US 10,713,569 B2)
- 2020 Method and apparatus for a manifold view of space (US 10,679,099 B2)
- 2020 System and method for full-stack verification of autonomous agents (US 10,671,077 B2)
- 2020 Adversarial learning of photorealistic post-processing of simulation with privileged information (US 10,643,320 B2)
- 2018 Training constrained deconvolutional networks for road scene semantic segmentation (US 9,916,522 B2)

SELECTED AWARDS & HONOURS

- 2021 National Research Award for Public-private Partnership in Innovation | Barcelona, Spain
- 2016 Honors, Cum Laude PhD Thesis | Barcelona, Spain
- 2016 Finalist for Best System Paper Award at the Robotics Science and Systems (RSS) conference | Award given by the RSS consortium to outstanding systems papers presented at the RSS conference. Michigan, USA
- 2010 Honourable mention Computer Science, 1st class | Promotion 2005–2010 Murcia, Spain
- 2009 Award of excellence in academic performance | Top 10 student in Science Murcia, Spain

SELECTED PUBLICATIONS

M. Roberts, R. Wang, R. Zawar, R. Dey-Prakash, Q. Leboutet, S. R. Richter, M. Müller, G. Ros, R. Tang, S. Leutenegger, Y. Hold-Geoffroy, K. Sunkavalli, and V. Koltun, “SPEAR: A simulator for photorealistic embodied AI research,” in *European Conference on Computer Vision (ECCV)*, 2026.

K.-H. Lee, G. Ros, J. Li, and A. Gaidon, “SPIGAN: Privileged adversarial learning from simulation,” in *International Conference on Learning Representations*, 2019.

A. Dosovitskiy, G. Ros, F. Codevilla, A. Lopez, and V. Koltun, “CARLA: An open urban driving simulator,” in *Conference on Robot Learning (CORL)*, (Mountain View, CA, US), 2017.

P. Alcantarilla, S. Stent, G. Ros, R. Arroyo, and R. Gherardi, “Street-view change detection with deconvolutional networks,” in *Robotics: Science and Systems (RSS)*, Michigan, USA, June 2016.

G. Ros, L. Sellart, J. Materzynska, D. Vazquez, and A. Lopez, “The SYNTHIA dataset: A large collection of synthetic images for semantic segmentation of urban scenes,” in *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, (Las Vegas, USA (short oral)), 2016.

Additional publications: Google Scholar | **Citations:** 16,000+