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OpenDR



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OpenDR H2020
Research Project



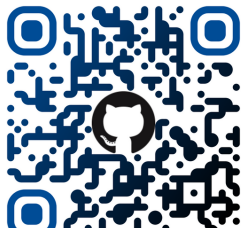
OpenDR

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opendr-eu/opendr

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Consortium

The OpenDR consortium consists of five top-ranked academic and research institutes: Aristotle University of Thessaloniki (Greece), Tampere University (Finland), Aarhus University (Denmark), Delft University of Technology (Netherlands), University of Freiburg (Germany) and three leading industry partners: CYBERBOTICS (Switzerland), PAL Robotics (Spain) and Agriintelli (Denmark).



ARISTOTLE
UNIVERSITY
OF THESSALONIKI



Tampere University



AARHUS UNIVERSITY



TU Delft

AGROINTELLI

PAL
ROBOTICS



CYBERBOTICS
professional mobile robot simulation

Open Deep
Robotics

Open Deep Learning toolkit for Robotics

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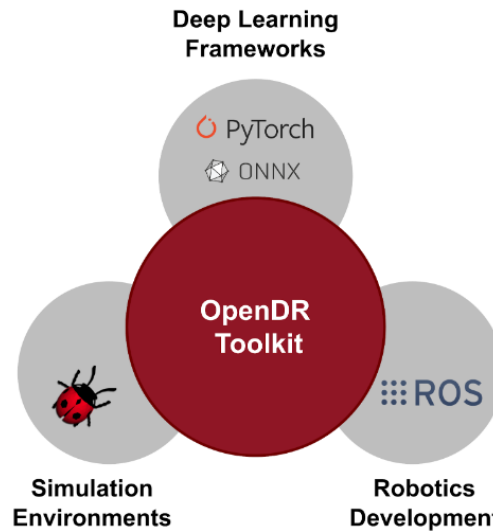
OpenDR aims to develop a **modular, open** and **non-proprietary** toolkit for core robotic functionalities by harnessing **deep learning** so as to provide advanced **perception** and **cognition** capabilities, meeting in this way the general requirements of **robotics applications** in the areas of healthcare, agri-food and agile production.

The OpenDR toolkit will contain easy to train and deploy real-time, lightweight Robot Operation System (ROS) compliant deep learning models for robotics. Version 2.1 of the toolkit is already available.

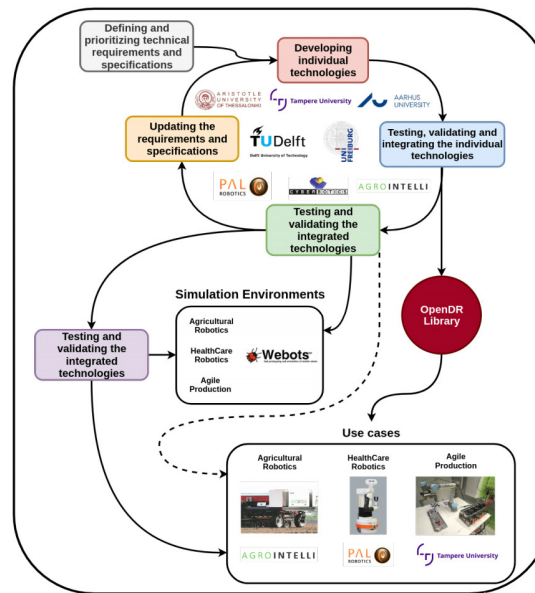
The project will propose, design, train and deploy models that go beyond static computer vision, towards real-time active robot perception on high-resolution data, providing deep human-centric and environment active robot perception as well as enhanced robot navigation, action and manipulation capabilities

Robotic autonomy will be enhanced by exploiting lightweight deep learning for deployment on robots and devices with limited computational resources.

OpenDR Toolkit



OpenDR Development and Validation Circle



OpenDR at a glance!

Toolkit Version 2.1 features

- Activity Recognition
- Face Recognition
- Facial Expression Recognition
- Heart Anomaly Detection
- Human Pose Estimation
- Hand Gesture Recognition
- 2D Object Detection and Tracking
- 3D Object Detection and Tracking
- Semantic and Panoptic Segmentation
- Action Recognition
- Full Map Posterior SLAM

- Mobile Manipulation
- Single Demonstration Grasping
- Advanced Simulation and Data Generation Capabilities
- Synthetic Facial Image Generation
- Human Model Data Generation
- Hyperparameter Tuning support

- ROS/RS2 API and ROS/ROS2 nodes for all tools
- C API for selected tools
- Support for ONNX standard
- Upgraded to CUDA 11.2
- Modular package installation

OpenDR is expected to improve the technical capabilities in robotics beyond the current state of the art by providing easily deployable, efficient and novel DL tools.

The project will also enable a greater range of robotics applications that can be demonstrated at TLR3 and above, thus lowering the technical barriers within the prioritized application areas and strengthen the competitiveness of companies by lowering the cost to access robotics-oriented DL tools.